Banking on a Refrigeration Retrofit

Contractor Overcomes Challenges in Downtown Cleveland Grocery Store Revitalization

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Cathy Hattenbach, president and owner of The Hattenbach Co., has been involved in a number of interesting commercial refrigeration projects over the years. Yet, she admits she felt a little thrill of excitement when she heard one of her company's leading clients, Heinen's Inc., a family-owned and operated regional supermarket chain, was planning to convert a long-abandoned landmark bank building in downtown Cleveland into a 27,000-square-foot grocery store.

"As a lifelong Clevelander, I found this such a beautiful building, and it's unfortunate it's been inaccessible to the public for 20 years," said Hattenbach. "Kudos to Heinen's for having the vision to put a supermarket in there."

Robust Rotunda

Heinen's Inc. was founded in Cleveland in 1929 and today has stores in Northeastern Ohio and the Chicago area. Hattenbach, which was founded in Cleveland in 1941, is a full-service contracting firm that performs the refrigeration, electrical, energy management, and custom millwork for Heinen's Cleveland stores.

The Rotunda — a moniker commonly used by Hattenbach and others when referencing the historic Cleveland Trust Building — was built between 1905 and 1908 on a very prominent corner in the heart of downtown Cleveland. It served as the headquarters of the Cleveland Trust Co. until a merger with another bank led to its closing in the early 1990s. The Rotunda features the work of noted American sculptor Karl Theodore Francis Bitter, murals painted by Francis Millet depicting scenes of the development of civilization and wealth in the Midwest, marble floors, and a Tiffany-style stained glass dome ceiling that is 61 feet in diameter and soars 85 feet above the floor. The Heinen's s project encompasses both the Rotunda and space in the adjacent 1010 Euclid Building.

Like many cities, Cleveland's downtown is experiencing a rebirth, with young people and retirees shunning the suburbs and choosing to move into new and renovated housing in the downtown core. More people living downtown has created a demand for more services, leading to the feasibility of a grocery store. It's likely that commercial HVAC and refrigeration contractors in other urban markets will see more of this type of adaptive reuse in the future.

Downtown Development Challenges

Installing all the refrigeration and freezer cases, walk-in freezers and coolers, food preparation stations, piping, compressors, and controls that a modern grocery store requires was no easy task in a 107-year-old building. Hattenbach worked closely with Bill Wells, Heinen's director of store planning, the architect, and the general contractor to make the $9 million project a reality.

"Everyone provided their input, and we helped the rest of the team understand what was going to work and what was not going to work," Hattenbach said. "We're big on logistics," she added, with a laugh.

Mike Palotsee, sales engineer, Hattenbach; Bob Burgett, Hattenbach's store designer; and Dennis Bruckman, vice president and owner, worked with the intent of keeping the system installation as clean as possible, which was often easier said than done.

"The basement of the Rotunda has 4-foot-thick concrete walls reinforced with steel," Palotsee noted. "So, planning the routing of all the utilities was extremely challenging. We couldn't interfere with too much of the existing fabric of the building."

Emerson Climate Technologies Inc.'s E2 system provides controls for medium- and low-temperature applications with case controls. Electronic expansion valves, courtesy of Danfoss, at each case location help limit the amount of piping, electric, and general utilities that had to be pulled. The store incorporates a combination of Hillphoenix cases, Barker Specialty Products by Hillphoenix, and, in some areas such as the salad bar, custom-built millwork that was fabricated locally and assembled on-site.

"There were many physical constraints caused by the size and shape of the building that really dictated how pieces and parts had to get mounted and the paths we took for the routing," Palotsee said. "That's where the case controls really were advantageous for us. They offer excellent energy efficiency, plus, they take care of temperature control, lighting, and anti-sweat control with local distributed controls."

Major challenges were encountered on this project doing things that are usually simple at traditional grocery stores such as getting the refrigeration and freezer cases into the building.

"The wine and beer section is on the second floor of the Rotunda, and we were thinking of rigging all those cases up onto the second floor from the inside," Hattenbach said. "Then, Dennis decided it would be easier to take out one of the Rotunda's huge windows, and use a crane to rig the cases directly onto the second floor through the opening."

This plan worked well despite taking place on what turned out to be a bitterly cold and windy December day in Cleveland.

"And, as you might imagine, we all gave a sigh of relief when that big window was back in place," Palotsee said. "The glass was surprisingly thin."

Setting the condenser was also a challenge because of the space constraints created by the amount of mechanical equipment already on the roof. The rooftop was accessible only through a narrow alley adjacent to the Rotunda. "Getting the crane down that alley with room to swing the condenser around was definitely tricky," Bruckman said.

The biggest challenge came when installers attempted to fit a compressor room in a tight space in the basement of the 1010 Euclid Building.

All of the equipment going into the basement, including a 1,500 pound Jamison door for a large walk-in freezer box, had to be lowered through a hole in the first floor that was made by the general contractor. Even the store's compressor rack had to be brought into the basement in three individual pieces and reassembled.

Running the refrigerant lines from the basement up into the Rotunda was another challenge. Where the line sets leave the compressor room in the 1010 Euclid Building, they make a 90-degree turn to get to the Rotunda. It was here that Hattenbach workers had to make their biggest penetration through walls that were 3-4 foot thick.

"It was literally like breaking into a bank," Palotsee said with a straight face.

There are also ongoing challenges associated with having so

❶ The Cleveland Trust Rotunda in downtown Cleveland. ❷ The Tiffany-style dome in the Cleveland Trust Rotunda has a diameter of 61 feet and is 85 feet above the grocery store's floor. ❸ The refrigerated display cases in the Rotunda. ❹ Mike Palotsee and Cathy Hattenbach pose with some of Hattenbach Co.'s handiwork. ❺ The compressor room's tight spaces required the refrigeration rack to be dropped down through the floor and then reassembled. ❻ This view shows the three levels of the Rotunda: The ground level has refrigerated display cases, the second level has the beer and wine section, and the third level houses offices. Note the murals on the third level, which depict the settlement of the Midwest. ❼ Heinen's opened its new store in The Rotunda in February.

much equipment in such a tight space, including providing sufficient ventilation and cooling to ensure optimal performance.

So Far, So Good

Despite all the challenges, the design is working well, and the store opened on schedule in late February. Its success is, in part, a testament to the creativity and determination of a good team of commercial refrigeration contractors. It's a feather in the cap of Hattenbach, and perhaps even an inspiration to refrigeration contractors in other cities whose downtowns are seeing a rebirth.

"There were three elements that made the construction of this store very challenging," said Bill Wells, director of store planning, Heinen's Inc. "First, we are on three different levels in two different buildings with no direct vertical connection between all three floors. Second, we don't control the real estate like we do at our suburban stores. Downtown, there are multiple users vying for limited rooftop space and vertical shafts, so routing of piping and utilities consumed a lot of time and money. Third, working within the confines of a historic property further constrains one's ability to deliver utilities to where they are needed in the most efficient and direct manner. The reward, of course, for dealing with all of these challenges is having a store in a unique and beautiful space like the Rotunda," Wells told *The NEWS*.

"The Hattenbach Company's design and installation of the refrigeration system for this project were spot-on, as usual," Wells added. "They were a valuable member of the design team and worked well with the general contractor and other subtrades throughout the job. They were one of the first companies on site and were one of the last to leave as their carpenters assisted us with final setup, dry fixtures, and millwork items. The work they have performed at our new downtown store is exemplary of the high level of service they have provided Heinen's for more than 30 years. The Hattenbach Company has been, and will continue to be, one of our most valued business partners."

The new store is a source of pride in Cleveland, and for native Clevelander Hattenbach, this project will always have a special place in the company's lore. "All the trades were so conscientious and meticulous working in this building," Cathy Hattenbach said. "I think we all felt it was an honor."

An Inside Look at the Systems

Mike Palotsee, sales engineer, Hattenbach Co., said the Heinen's Grocery Store in Cleveland featured refrigeration products courtesy of Danfoss, Emerson Climate Technologies, HillPhoenix, and others. "There is a wide variety of product offerings in this urban space, so a lot of care was given to case selection and product display," said Palotsee. "The main area of the Rotunda focuses on fresh, prepared, and service-driven offerings and includes 54 feet of service cases, three salad/antipasti bars, and more than 100 feet of fresh, multi-deck offerings all supported by 250 square feet of prep cooler.

"The second floor of the Rotunda has an additional 20 doors of craft beer along with a significant wine offering," he added. "All of the cases are by Hillphoenix, Barker Specialty Products by Hillphoenix, and Southern Store Fixtures. They are controlled by the Emerson Climate Technologies E2 Building Management System, with Danfoss electronic expansion valves on each case."

The first floor of the 1010 Euclid Building has more than 85 doors, including dairy, produce, and frozen food, with an additional 110 feet mixed with produce islands, produce, and open-deck dairy/beverage cases. "All of this is supported by an additional 2,060 square feet of cooler/freezer space and 460 square feet of refrigerated meat-cutting and cold-kitchen prep areas, all located on the lower level.

"The HillPhoenix parallel compressor rack has a remote receiver on the roof. It uses R-404A refrigerant with a split suction group. There are a total of seven Copeland compressors — five on the medium-temp and two on the low-side suction groups — with the lead compressor on each side having demand digital control for rack capacity control," said Palotsee. "All evaporator coils are manufactured by Heatcraft Refrigeration Products. Space was always a concern for the designers, and compressor selection was critical to meet both the required loads and efficient capacity control. There is a total of 77 hp on the medium-temp side providing more than 750,000 Btu, and 12 hp on the low-temp side, providing more than 100,000 Btu. Liquid subcooling is used to improve the efficiency and capacity of the low-temp compressors.

"Because of existing building constraints, the equipment room supplemental cooling loads are tied into the refrigeration rack system," he said. "The cooling tower capacity was at a premium, and, with limited area for additional rooftop units, it became apparent that we would need to size our condenser and equipment to handle the loads. It's not the traditional way we would handle those loads, but there isn't too much that is traditional about these types of urban projects, and out-of-the-box thinking is needed to overcome challenges."