



## Dairy Barn Keeps Contractor Moo-ving

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*These three barns were put together to form a 12,000-square-foot home. This is the pre-construction phase, prior to the roofline's change and major construction.*

CINCINNATI — James Gerdson estimates his company, Apollo Heating and Cooling, has installed several thousand mini-duct systems over 20 years. However, his company's most recent project was, as he described it, "the most challenging from the standpoint of coordination and job site conditions."

Gerdson and Apollo had the task of installing the heating and cooling system at a historic dairy property. Three barns were put together to form a unique, 12,000-square-foot home. Apollo, which has been family owned and operated for the last three generations, turned to the Unico System, manufactured by Unico Inc., to supply the needed HVAC equipment.

"The system was chosen due to space constraints," explained Gerdson. "Traditional ductwork for this process would have not been physically possible. Unico's advantage was that it took one-tenth of the space of a conventional system. This led to the best overall installation and finished product."

“By not choosing this mini-duct system on this project, there would have been numerous changes to the look and feel of this beautiful home.”

The project was described as challenging due mainly to the way the contractor had to stage the delivery of equipment, the overall man-hours it took to complete the system, and working with the general contractor and homeowner.

“We had multiple subs to contend with,” said Gerdson. “The coordination was more than we typically deal with. We found all of the subs, and the general contractors were easy to coordinate. However, the magnitude of the project was more interacted with the amount of the systems.

“In addition, when changes did occur, we had to be able to react and coordinate those correctly.”

## THE BEST CHOICE



*This is the great room/recreation room, located on the second floor. It is all open-air, with rough-cut cedar beams. The challenge was to minimize ductwork intrusion, and this was accomplished through the flexibility of the mini-duct system.*

According to the Cincinnati-based contractor, the homeowner chose the property because of its unique architecture style, location, and overall beauty.

“I am not really sure why they decided to go the route they did, but the property is beautiful,” said Gerdson. “It is a historic dairy farm, with over five acres of land, including a 2,000-square-foot conservatory and guest home.”

Because the homeowner wanted to have exposed beams and trusts throughout the home, the Unico System was selected to fit the bill. The second floor, for example, has completely beamed ceilings. Gerdson opted to install six mini-duct systems, creating six separate zones.



The Unico System is a high-velocity, mini-duct system that, according to the St. Louis-based manufacturer, has been installed in over 100,000 homes and businesses across the United States, in Canada, Europe, and the Caribbean. Simply, it fits where conventional systems can't. According to Unico, its system's modular air handlers and coils can be installed in ceilings, floors, crawl spaces, and closets. It said its flexible 2-inch supply tubing can be routed through ceilings, floors, and wall cavities.

"We find that there are specific applications for mini-ducts," said Gerdson. "Typically, homes that are retrofitted — and without ductwork — are perfect candidates because mini-duct systems allow you to install without major changes to a home's structure, including soffits, drop ceilings, etc.

"Also, you are able to get to the outside perimeter of the rooms to blanket the outside wall, preventing the hot humid summer air from getting in and the cold air in the winter. There is one centralized return per system, which makes it a lot easier in older homes."

According to Gerdson, the Unico System is 30 percent greater in its ability to dehumidify, too.

"You can use zoning with the system, along with indoor air quality products, which we believe, make a strong choice for any home," he explained.

If there is a drawback, Gerdson said the system cannot have an ECM motor for the air handler.

"But, overall, I think the drawbacks are not enough to prevent proposing mini-duct systems in custom new home construction and retrofit applications," he said.

The mini-duct system utilizes condensing units, or heat pumps, similar to a traditional duct system. The indoor air handler and coil are equipped with electric heat packs, designed "to give the same overall range of heating and cooling capabilities as a traditional system," said Gerdson.

"You can use any outside condensing or heat pump unit with the system," he explained.

In this case, Gerdson chose 14 SEER outdoor heat pumps from Trane, with two-stage filtration and ultraviolet (UV) lights throughout. He said each system has a safety redundancy built into it, with secondary drain pans and wet switches.

"We chose our heat pumps for the reliability and efficiency interface with the

mini-duct system," said Gerdson.

## PLANNING HELPS



In all, there is a total of 26 tons of cooling and heating, broken up over six systems. The entire project took Apollo, which has been in business since 1910, nearly 14 weeks to complete.

"We were installing multiple systems with all new ductwork and equipment," said Gerdson. "It took approximately two weeks per system, with an additional two weeks of detailed wrap up, which included air testing, adjustment, quality check, and factory-trained technician commissioning.

For the most part, the project ran smoothly, mainly because of Apollo's planning.

"We spent about a third of the project in the planning phase," said Gerdson. "This included making proper heat loss/heat gains. We even had a scaled blueprint of the property laying out where all of the supplies and returns were. We went over this with the homeowner prior to starting, to make sure they understood the process. Once approved, this is when we moved forward."

Prior to starting, the contracting firm ordered 110 percent of all needed materials, which were delivered in stages to the site. Prior to starting, the firm reviewed the blueprints and job specifications with the installation team.



"The project manager visited the job site several times to make sure all of the material and project were going according to plan," said Gerdson. "At the end of every project, it went through a commissioning phase, which included an air test to double-check cfm requirements, as well as a 15-point factory startup."

That's not to say the homeowner did not make matters complicated. At times, he made several revisions in his architectural drawing, which forced changes throughout the process. The floor plans would change, which caused some of the framing to change, "which effected where we would put the supplies and returns."

"The property's exposed beams and lack of space to conceal traditional ductwork could have made the changes an issue," said Gerdson. "However, due to the flexibility of the mini-duct system, we were able to make changes without incurring any additional cost or losing any efficiency. If we had traditional ductwork, it would have been a much larger issue because of the lack of flexibility in the metal ductwork system."

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