

St. Rose of Lima Gets a Stealth Central Air Conditioning System

The St. Rose of Lima Catholic Church, a stunning gothic structure completed and consecrated more than 115 years ago, had awed and inspired generations of its members. Yet to churchgoers, the historic landmark in Perrysburg, Ohio, had one major drawback – it had no air conditioning system to relieve parishioners from the hot, humid and uncomfortable Ohio summer temperatures.



When Northwest Mechanical was tasked with cooling a century-old gothic Catholic church, every measure had to be taken to preserve the structure's integrity. SpacePak was the perfect solution for the job.

Nick Getzinger of Northwest Mechanical, Inc. was tasked with servicing the various mechanical systems of the church. In the spring of 2003, as temperatures began to rise and parishioner attendance began the annual summer decline due to the uncomfortably warm services, Getzinger contacted his wholesale HVAC distributor, TTI Maumee Equipment of Perrysburg in search of an air-conditioning option that would provide a more comfortable environment in the church.

"The greatest concern was to preserve the integrity of the beautiful structure," said Mark Evans, president of TTI Maumee Equipment. "We were all concerned about the impact that adding ductwork for a central air conditioning system would have on the elaborate, decorative finishes of St. Rose's, so we immediately ruled out a conventional air conditioning system."

The alternative was a state-of-the-art mini-duct or high-velocity air conditioning system that does not require the typical ductwork, or the related construction.

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"SpacePak was the perfect solution for the job because it doesn't require the major remodeling you would need to install traditional air conditioning equipment," Evans said. "Plus, we wanted the AC outlets to blend in seamlessly with the artwork and beauty of the church," he said.



SpacePak, a high velocity air conditioning system, uses flexible tubing that easily threads through existing spaces in walls, ceilings, and floors, making the remodeling usually required to install metal ductwork framing, obsolete. SpacePak provides draft-free AC through a network of inconspicuous two-inch round outlets that are available in a wide variety of designs and colors to blend in with virtually any décor – including that at St. Rose of Lima Catholic Church.

Unfortunately, Evans soon discovered that a conventional SpacePak installation with one air handler and one return would not be sufficient for this project due to the massive size of the facility. The St. Rose's space covered approximately 34,000 square feet, and the floor to ceiling height inside the nave was 45 feet tall at the peak. Determined not to give up on the SpacePak system, Evans contacted John Mottinger of Mottinger Associates, the local SpacePak representative, to review the job.

"We all estimated that to adequately cool the entire structure would require 25 tons of air conditioning," said Mottinger, "and that was the initial problem since the largest SpacePak unit is only five tons."

In addition, because the church would only be cooled for the services and not run full time, the SpacePak system would have to effectively condition the large space in a relatively short period of time, and without disrupting church services.

Mottinger was convinced that a custom SpacePak configuration would be well-suited for the application, and after an initial walk-through, a plan and equipment list was developed that included nine air handlers, 400 feet of plenum, 3,500 feet of two-inch supply tubing, and all the related accessories.

The plan was to attack the problem from both the ground-level and from ceiling height in order to efficiently cool the massive space.

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The locations for the air outlets were determined by the availability of existing structures to be used as mounting points. As such, these outlets were installed in high ceiling areas as well as in the four-foot-high radiator enclosures that ran along both sides of the sanctuary.

The ceiling-mounted terminations were grouped into pairs and mounted in black 10-inch round lighting fixtures that do not actually contain any lighting.

"These faux lighting outlets blended seamlessly into the ceiling, and based on their mounting height, the supply air now falls onto parishioners in the pews below, without creating a draft," said Mottinger.

Terminations mounted on the floor in the radiator covers involved four outlets grouped together per cover with air directed straight upwards. The radiator grill covers were used to mask the terminals.

"This system sends the conditioned air upwards which, in concert with the ceiling diffusers blowing down, creates a rotation of air in the entire space," said Mottinger. "It works very efficiently, and most importantly, is whisper-quiet."

This process SpacePak employs is called aspiration. In this and all SpacePak applications, outlets are engineered in such a way as to gently mix cool air with room air. Temperatures remain the same from floor to ceiling while also ensuring a draft-free environment.

"The result was that we were able to install a stealth AC system that was virtually unnoticeable to church members," said Mottinger. "Plus, the beautiful artwork and decorations in the sanctuary are protected against the effects of high humidity and condensation when the system is in operation," he added. SpacePak uses a six row cooling coil, three times deeper than conventional air conditioning, which results in colder, drier air. Lower humidity levels create a more comfortable environment, even at higher temperatures, which saves operating costs.

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SPACEPAK 
U.S. 800.465.8558 | Canada 905.670.5888