

CASE STUDY

Air Handlers Contribute Comfort, Cost-Efficiency to Arkansas Capitol

Modular semi-custom systems can help contractors and system designers meet space constraints in older buildings, like this one.

The next time Bill Clinton visits the Arkansas State Capitol, it's likely to be a more comfortable experience than when he was governor.

An imposing building in downtown Little Rock, the Arkansas State Capitol is a smaller-scale replica of the nation's capitol in Washington, D.C. Having been home to the Arkansas legislature since 1911, the State Capitol was designed long before state-of-the-art HVAC systems were either an architectural or an engineering concern.

But when the need for a new system became evident, the age and design of the building – nearly a century old – could not be used as an excuse for installing a new system with less-than-optimum comfort and indoor air quality.

The powers that be with the Secretary of State's office wanted a system that offered flexibility, reliability and energy efficiency. It was also essential to keep a close eye on the budget, especially since the public's eye is often focused on such a high-profile political landmark.

The challenge of finding a solution went to a locally based HVAC consulting firm, Goodman Engineers.



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The objective was to replace an existing fan coil system with a high efficiency VAV central station system. Because space constraints and budget limitations were two of the most important considerations in satisfying the job's requirements, Goodman Engineers recommended a modular system design.

Two McQuay International Vision™ CAH 050 air handlers, each of which delivers nearly 25,000 CFM, are the backbone of the system.

“We chose Vision™ air handlers because they gave us the flexibility

and quality we needed at the price we needed,” said Mark Eakin, P.E., project manager, Goodman Engineers at the time of the construction.

Custom Modular Platform

“These air handlers feature a patented custom-modular platform, which not only allowed us to choose from a wide selection of components and sizes, but also to design a semi-customized solution at prices much lower than a fully customized system would have cost to install.

The Vision™ can also be shipped completely assembled or by section, which was an important consideration, because size and space constraints would have made it virtually impossible to install the air handlers if they were pre-assembled.”

Certified Mechanical Inc. (CMI), also of Little Rock, handled the installation, which involved the largest Vision™ models. “These units are so big there was no choice but to ship them in sections,” said Mike Tygart, vice president of CMI. “But because of their modular construction, assembling them on site was a breeze.”

The air handlers were not, however, installed in existing space within the Arkansas State Capitol. Instead, a new mechanical room was built on the west side of the building, 20 feet below the ground, and later covered over with a parking lot.



The Vision air handlers were shipped in sections, to overcome space limitations.

“The hardware for each unit was included, along with the instructions,” said Tygart. “All it took was sliding the modules together, connecting the gasketed splice collars and fastening a few bolts.”

According to Tygart, the installation went smoothly, except for a minor mishap. “One of the coil modules was crushed during shipment, and we had to order a replacement. But again, the modular design made it easy to remove the damaged section and slide the new one in place.”

CMI was charged to complete the installation within a tight turnaround time – before the State Legislature convened in the Fall. But even with the need to replace the damaged coil, the air handlers’ modular design made it possible to assemble the system in a short time frame.

It will also make it easier to assemble new units in the future. The Arkansas Capitol Building’s HVAC system upgrade is a multi-stage project, and the State has plans for two more air handlers during a later phase.

Flexibility Offers Contractors Options

Jim Olsen, marketing manager for McQuay’s Vision and Coil product lines, says the key benefit of the Arkansas State Capitol system – flexibility – is becoming an increasingly important feature, not only for air handlers, but for HVAC systems in general.

“With more than 50% of the buildings in the United States built before the 1970s and as much as 70% of the existing inventory dating from the 1980s, space constraints are often a major obstacle in retrofit jobs,” Olsen said.

“And when you consider the growing pressure to link legacy HVAC systems with building automation and other in-house systems that often require communication with technologies that didn’t even exist when the HVAC system was originally installed, the need for flexibility in design and engineering is even more apparent.

As a result, we believe flexibility will play a much more significant role in influencing future HVAC purchase decisions than it has traditionally done in the past.”

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