



Grant Towers Residence Quad DeKalb, Illinois



NIU Grant Towers Residence Quad is Updated for Efficiency with Vertical Cabinet Series Fan Coils from IEC

Today's enrolling college and university students identify the on-campus residence experience as one of the most significant points of evaluation for selecting a school. With discerning appetites for appealing interiors, a range of in-house amenities and a comfortable year-round indoor climate, students are, more than ever, reshaping the standard for dormitory life.

Recognizing this, educational institutions have in recent years earmarked construction budgets specifically for improvements and upgrades to dormitory facilities. Focusing on architectural and interior design and incorporating the latest

building products and systems, these projects are in many ways leading the industry in innovation, efficiency and occupant comfort.

As one example, the Illinois State university system recently granted funding to Northern Illinois University (NIU) for a multi-year renovation of its three-building Grant Towers residence quad. This project includes reconfigurations for more spacious double rooms and additional single rooms, as well as new interior finishes with open architectural elements and modern, modular furniture. In addition, the buildings would receive complete upgrades to their existing mechanical systems, to improve both energy

efficiency and occupant comfort.

As part of the mechanical system portion of the renovation project, existing vertical fan coil units in the first two residence towers would be replaced with 740 (200 to 600 CFM capacity range) Vertical Floor Series fan coil units from International Environmental (IEC). The three 50+ year-old, 13-floor, triangular-shaped residence towers presented a significant challenge in retrofitting the fan coil units, as, while architecturally interesting, they created odd exterior walls for installation. As such, IEC's customization capabilities became key to keeping the renovation project on track with meeting scheduling and budgetary goals.

"Without the ability to customize the fan coil unit sizing, NIU would have had



to go in a completely different direction with the project," said Jake Vorac, vice president at Mechanical Sales in Davenport, Iowa. "It would have been a 'waterfall effect' of sorts, impacting everything from the architectural renderings to the furniture."

According to Vorac, the project also required each unit to have fresh air intake capabilities, which was not something available on a standard fan coil.

"Overall energy savings was a high priority for this project, as these were some of the most energy-intensive buildings on campus," said John Flemming, mechanical engineer and project manager at KJWW Engineering Consultants.

According to Flemming, the existing mechanical systems were using 100-percent outside air to ventilate indoor spaces and exhaust air up to the roof. To make distribution more efficient, he and his team specified a glycol runaround coil that would bring fresh air indoors. This would work in conjunction with the outside air openings designed as part of the custom fan coil cabinets from IEC.

"This design enabled us to distribute fresh air to all floors much more efficiently," Flemming said.

The Grant Towers quad renovation project commenced in 2009 with

"I don't think there's another manufacturer that could have gotten this right," added Vorac.

design of the new mechanical system. At this time the university also planned for new electrical and lighting systems, and other energy efficiency improvements including replacement windows and doors.

Installation of the new IEC vertical fan coil units began in the first residence tower in 2011, which was executed on a floor-by-floor basis.

"This was a complete tear-out job, which was efficiently managed in stages by tackling and completing one floor of the building at a time," Vorac explained.

Installation of the IEC units in the second tower began in the late summer of 2012, which incorporated some adjustments to the project design based on experiences with the first tower. Namely, the project team decided to commission custom aesthetic panels for the units in the second tower, which would cover gaps resulting from the size differences of the existing and replacement units. These

units additionally featured IEC's latest Eco-telligent Motor technology, further enhancing unit efficiency.

"With the renovations, the buildings now feature three dorm room layouts, so we decided to customize fan coil unit designs for each room type," said Flemming. "One 3-ft. 6 $\frac{1}{4}$ -in. unit was specified for each corner room, while two 5.2-ft. $\frac{3}{4}$ -in. units would be installed in the two-window rooms, and a singular 7-ft. $\frac{3}{4}$ -in. unit would go into the one-window rooms." Further customization of the cabinet designs was provided to accommodate specially developed IEC valve packages required for the unusual installations.

The second tower was completed in 2013, and the HVAC systems of both residence buildings have been operating seamlessly since that time. While energy savings data is still forthcoming, the university has already taken note of several ways in which the project has been cost-effective.

"We've seen a significantly faster installation, which translates to hard dollars and cents, because we're not waiting on any outside suppliers," said John Lauer, project superintendent at Ringland-Johnson Construction, and general contractor for NIU. "When you've got a supplier making custom units and providing components like pre-fabricated end panels, you just have to hope it's all going to come out uniform and look intentional. IEC definitely delivered on this, and everything looks very cohesive."

"I don't think there's another manufacturer that could have gotten this right," added Vorac. "It was a complex job with many specials required to get it done."

The renovation project is slated to continue in the third building with mechanical system design to begin in 2014, and upon its completion more than 1,100 IEC fan coil units, including many custom cabinet designs, will be in operation on the NIU campus.



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