



### PROJECT INFORMATION

- Building Type:**  
Multi-family – Student Dormitory
- Project Type:**  
Modular New Construction
- Location:** West Burlington, Iowa
- Floors:** 4
- Dormitories:** 36 with 144 beds
- Square Footage:** 10,000
- Building Owner:**  
Campus Community Developers
- Mechanical Contractor:**  
Arnold Refrigeration, Burlington, IA
- Daikin Sales Representative:**  
Todd Stegmiller, Mechanical Sales Inc.,  
Davenport, IA

### CHALLENGE

Time was of the essence and HVAC equipment had to be pre-installed to meet dormitory construction deadlines targeting the start of the new school year.

### SOLUTION

Daikin indoor units were pre-installed into modular pods that were shipped to final destination. Modules were assembled then connected to outdoor VRV heat recovery units. The selection of VRV qualified for approximately \$28,000 of rebates from the local utility company.

[www.scciowa.edu](http://www.scciowa.edu)

Located in West Burlington, Iowa, Southeastern Community College (SCC) has been providing quality education since opening their doors in 1920. To stay competitive over the years SCC has expanded the curriculum and introduced additional campuses. As smaller community colleges rose in popularity, SCC had a radical idea to gain a competitive edge to attract students and increase academic performance - on-site housing. A modern student housing complex was seen as a sound investment that would differentiate SCC from surrounding schools and provide students with affordable living with minimal distractions.

SCC worked with local experts, Campus Community Developers (CCD), to plan a residence hall that would house roughly 120 students and 3 residence attendants per semester. Energy efficiency and the financial savings it generates was an important objective for both parties. Additionally, this project paralleled with the school's values

of "Excellence, Integrity, Stewardship and Continuous Improvement." Daikin VRV provided a solution that both exceeded the developer's energy goals and put the college's values into practice.

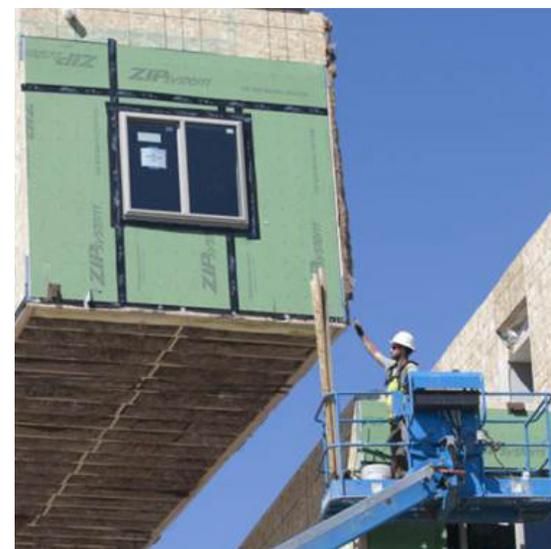
Daikin's heat recovery system delivers 76-tons of simultaneous heating and cooling to Blackhawk Tower ensuring all students and faculty are comfortable regardless of the temperature outside. The first floor of the building is comprised of amenity space including a cafeteria, student lounge and study areas. The VISTA™ cassette was the ideal solution for these open spaces. The cassette fit seamlessly into the drop ceiling and allows for flexible airflow patterns by adjusting the louvers.

A mix of ducted and non-ducted fan coils were used for the different size common living areas throughout the tower. A majority of the dormitory rooms have a compact vertical air handling unit, located in a closet in the kitchen area, which conditions the space and makes maintenance easy and accessible for the facility staff. Wall mounted units and concealed ducted units were used in the smaller dormitory rooms where less free space is available. Daikin's range of indoor fan coils complimented the application and provided an environment that is conducive to learning with low sound levels and a superior comfort.

Fresh air was an important consideration for students to stay alert and focused on academics. Mechanical Sales recommended the use of an energy recovery ventilator. This ventilator serves two main purposes. First, it exhausts air from the restrooms and kitchenettes but strips the air of much of the valuable energy. Second, it adds fresh outside air into the tower while absorbing the energy from the exhaust air.

The development team was highly conscious of the unique occupancy patterns within a college dormitory setting. Knowing that student housing varies in occupancy rates, which greatly influences energy consumption, the developers wanted to leverage this aspect

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to maximize energy savings and maintain comfort control. A complete energy savings analysis was performed prior to finalizing construction plans which was used to support the first cost financial justification of the project.

Daikin's VRV solution excels in the mild temperatures Iowa experiences most of the year, due to the inverter compressor's ability to handle part load capacities. However, the VRV system also has the ability to provide high capacity heating, even during the harshest of winters. To make this scenario even more attractive, the selection of VRV qualified for approximately \$28,000 rebate from the local utility company. The local utility company funded an analysis from an Engineering firm who then reported and verified the most attractive of multiple energy conservation strategies for the dormitory project.

The construction schedule was tight and the fall semester was quickly approaching. Campus Community Developers devised a plan to build the new student housing more efficiently, off-site, using modular construction that was shipped to the final location. The modular construction reduced build time to

ensure the residence hall would be open prior to the first day of classes. All of the 51 modular components (pods) were constructed in Worthington, Minnesota, approximately 400 miles from the Iowa construction site. Construction crews in West Burlington, IA were breaking ground and laying the foundation for the pods that would make up the student living areas. Daikin VRV's modular design and efficiency outperformed traditional solutions for this unique installation. The flexibility provided with Daikin VRV systems allowed Blackhawk Tower to be constructed in two different locations, simultaneously, and maintained a seamless connection and commissioning process when all components were brought together.

The comfort system in Blackhawk Tower can be controlled on a multitude of different levels. An *intelligent Touch Manager™* was installed to serve as a central point of control and information for the entire VRV system. The facilities staff can easily see the status of all indoor and outdoor units and adhere to any maintenance notifications that may need attention from the *intelligent Touch Manager*. Students also have control of their dormitory room space but on a limited level with a *Navigation™* remote control. From the

central controller each *Navigation* remote control was programmed to allow the student residents to change the temperature within certain parameters.

Jeff Ebbing, Communications and Marketing Director at SCC, commented about the success that Blackhawk Tower residence hall brought to SCC. "Where we were once miles behind, we are now miles ahead," stated Ebbing. This was mainly because Blackhawk Tower was designed with the students in mind. When compared to traditional systems, which are often used in dormitories, the Daikin system provided much more than efficient heating and cooling; it operates at a quiet sound level. Achieving low sound levels has long been attractive to educators as they seek to diminish or eliminate distractions presented to learners. "The bright and airy rooms are a welcome change from the tired facilities previously available to them. The main floor commons area has been a big hit as well. They've not had such a large, inviting space to hang out. The entire facility has really enhanced the student's experience. This project has been so successful, even achieving greater utility savings than originally expected, that a few more dormitory projects are in the works for SCC," said Ebbing.

#### DAIKIN EQUIPMENT

- 76-Ton REYQ VRV Heat Recovery
- 6 FXAQ Wall-Mounted Unit
- 8 FXMQ Medium Static Ducted Unit
- 8 FXZQ 4-Way Cassette
- 30 FXTQ Vertical Air Handling Units
- 1 VAM Energy Recovery Ventilator
- 1 DCM *intelligent Touch Manager™*
- 54 BRC *Navigation™* Controllers

## THANK YOU



#### ADDITIONAL INFORMATION.

Before purchasing this appliance, read important information about its estimated annual energy consumption, yearly operating cost, or energy efficiency rating that is available from your retailer. Actual savings and costs will vary. Cost and savings statements are applicable solely to the installation indicated. For additional information please contact the installing contractor, distributor or factory representatives.

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