



Fairmont, West Virginia

# FAIRMONT STATE UNIVERSITY

## CHALLENGE

Selecting an energy-efficient HVAC system for a newly built on-campus housing facility

## SOLUTION

Mitsubishi Electric VRF

## RESULT

Year-round comfort and substantial cost savings with Diamond Controls™



At Fairmont State University, Fairmont, West Virginia, teaching and learning matters and students are first priority. When the only on-campus, apartment-living complex—The College Park apartments—approached the end of its lifespan, the need for new student housing became apparent. After several years of research, planning and design, the University Terrace project took shape in 2015 and was completed in October 2016. The **new 110,000-square-foot facility is comprised of two four-story buildings and one three-story building housing a total of 345 students.** When it came to selecting efficient mechanical systems for the project, the university looked at a Variable Refrigerant Flow (VRF) system from Mitsubishi Electric.

Stephanie Slaubaugh, construction project manager, Fairmont State University, acted as the owner's representation and oversaw the scheduling and budget coordination on the project. The university had a few requirements on the search for their new system. She said,

**"We wanted a system that was energy-efficient with low ongoing maintenance costs. We also wanted a system that offered a high level of occupant comfort and control."**

Michael Heath, senior mechanical designer, McKinley & Associates, Wheeling, West Virginia, was hired to specify the new HVAC systems. "The university originally wanted a system that was inexpensive but very energy-efficient to achieve a quick payback. They also wanted zone control and every suite within the building to have its own unit."

With Heath's assistance, the university considered three types of systems: packaged air terminal conditioners (PTACs), variable air volumes (VAV) and VRF. After a deep energy analysis, Heath presented the best options for the university. He said, **"If the university selected VRF, it would take three to five years to get a full payback on the system. With a PTAC, they were never going to get the savings back, and with VAV, it would be 10 to 12 years. Although VRF required a little more**



money to install, the school gets energy savings.”

In addition to VRF’s substantial energy savings, it also offered another perk to the university: easy maintenance. Heath said, “In other areas of the university, they have VAV and heat pump systems, but wanted a system that offered less maintenance as well. They wanted something where the maintenance crew didn’t have to be there every day.”

The university agreed with Heath’s recommendation. Slaubaugh said, “We had used ductless in several converted classroom renovations that turned out pretty well, but never on a project of this magnitude. **This technology also helped us overcome our biggest concerns like comfort in below zero temperatures during winter as well as met our requirements for aesthetics and noise.**”

To select a brand, the university compared Samsung and Mitsubishi Electric. After an in-depth analysis, the project team concluded that Mitsubishi Electric VRF technology was the appropriate choice. Slaubaugh said, “**Mitsubishi Electric offered a leading product and performance rating. We toured several housing projects outside of**

**our state that utilized Mitsubishi Electric and their maintenance department had good reports on the equipment.”** She continued, “We also were able to remove the need for a third-party controls contractor. Mitsubishi Electric offered controls as part of their base contract. We went through several demonstrations, toured a mock setup and were able to interact with their controls software and it was comparable to the base controls that we wanted so we deleted the controls package and used their web-based program.”

Heath also noted how the distributor, Comfort Supply, Pittsburgh, Pennsylvania, played a key role in helping the university select Mitsubishi Electric. “Dave Heckler and Justin Kern sold Mitsubishi Electric so well. They arranged for the entire team to look at apartments at the University of Pittsburgh. We toured and spoke with the maintenance guys. The university really liked the system.”

Upon selection of the system, installation proceeded smoothly. Slaubaugh said, “The installation was very streamlined and met our extremely tight schedule. There were no issues that arose creating change orders related to the VRF system. The crew took care of sealing off

all ductwork from any construction/drywall dust and changed the filters.”

Heath also added that the contractor, HRANEC Sheet Metal Incorporated, Uniontown, Pennsylvania and Comfort Supply were both helpful throughout the installation. He said, “The contractor did a very good job installing the refrigerant piping and the ductwork, but also placing the indoor units in accessible areas where it’s easy to maintain. Comfort Supply also sent a few technicians to help on the job site. They made sure the piping was installed correctly and were available to answer any questions. They didn’t just help sell the project, they helped out on site.”

Since the project completion, the system has lived up to the university’s expectations. Slaubaugh said, “**The students have been very happy with the individual control of the system as opposed to PTAC units. We did conduct several evening trainings for the students and showed them how to use the thermostat, which helped greatly. Overall, the experience has been good based on the minimal number of comfort complaints we have received.**”

Heath also added that the university



*"Mitsubishi Electric's web-based controls are a top-of-line building control system. With 3-D, interactive graphics, the system allows you to adjust temperature on an entire floor, an entire building or the whole complex. We were also able to tie in and control our Energy Recovery System from Engineered Air."*

*– Stephanie Slaubaugh, construction project manager, Fairmont State University*

has benefited from using Mitsubishi Electric Diamond Controls™ to monitor the new apartment complex. "We simplified the controls for the university, and they've had hardly any complaints. The only complaint was in the learning process making sure the students understood the systems. Stephanie went through each space making sure the suites were going to be very comfortable for the students."

Slaubaugh agreed: "Mitsubishi Electric's web-based controls are a top-of-line building control system. With 3-D, interactive graphics, the system allows you to adjust temperature on an entire floor,

an entire building or the whole complex. We were also able to tie in and control our Energy Recovery System from Engineered Air."

In addition to having superior control over occupant comfort, the university has plans to take full advantage of the energy savings. Heath said, "They are going to conduct an energy saving analysis at the start of the 2017 school year and try to achieve an ENERGY STAR® certification."

With Mitsubishi Electric VRF in place at the University Terrace apartments, Fairmont State University can now offer students a comfortable living environment without fear of paying too much in utility bills. Slaubaugh said, "We are not regretting this decision because of the energy savings. The system does everything we wanted."

## PROJECT TEAM

### HVAC Contractor:

HRANEC Sheet Metal Incorporated, Uniontown, Pennsylvania

### Engineering Consultant:

McKinley & Associates, Wheeling, West Virginia

### Distributor:

Comfort Supply, Pittsburgh, Pennsylvania

## EQUIPMENT

- ▶ (18) PURY R2-Series Outdoor Units
- ▶ (3) PUHY Y-Series Outdoor Units
- ▶ (4) PUMY S-Series Outdoor Units
- ▶ (102) PEFY Ceiling-concealed Indoor Units
- ▶ (11) PKFY Wall-mounted Indoor Units
- ▶ (9) PLFY Ceiling-cassette Indoor Units
- ▶ (57) PVFY Concealed Vertical Ducted Indoor Units
- ▶ (4) EB-50A Centralized Controllers
- ▶ (21) CMB BC Controllers
- ▶ (171) PAC Simple MA Remote Controllers
- ▶ (8) Remote Temperature Sensor Units for Indoor Units