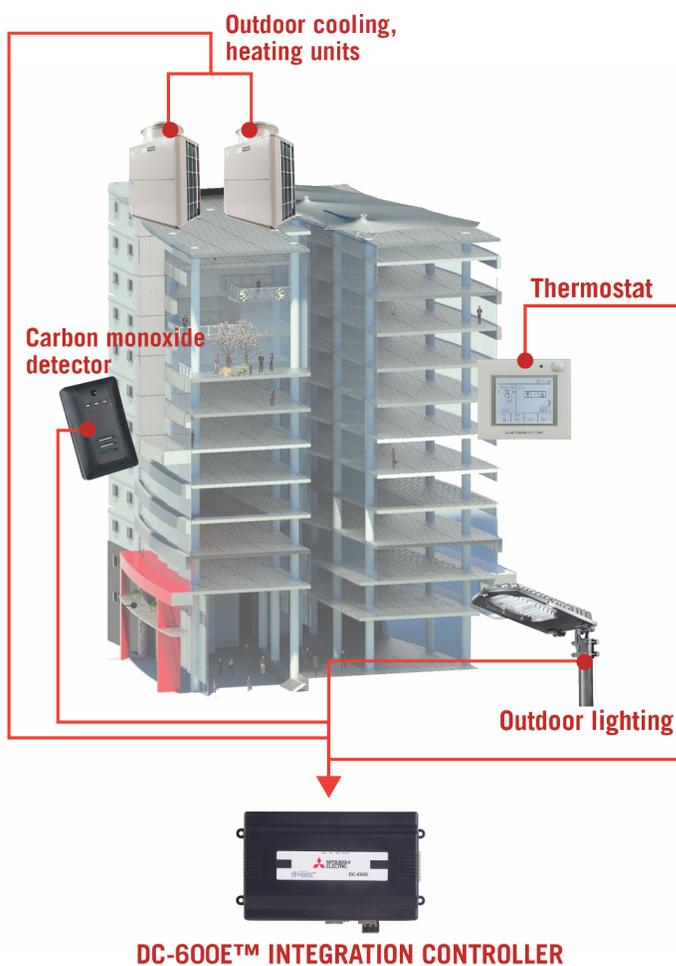




SPRING 2015: MULTIFAMILY

Diamond Controls: Behind the Scenes

Engineers specifying HVAC for multifamily facilities have a new, innovative system: Diamond Controls™ solutions from **Mitsubishi Electric US, Inc. Cooling & Heating Division** (Mitsubishi Electric). Diamond Controls pairs the DC-600E™ Controller with comprehensive design, integration and installation services from the Professional Solutions Group to create an unparalleled level of whole building management.



Effective controls make an immense difference in multifamily building management, saving money, time and effort. A manager using Diamond Controls can pull up historical trends, operating reports and analyses in real time, revealing how the building's systems are reacting to user behavior, building conditions and outdoor ambient conditions. Diamond Controls can be applied to facilities ranging from a four-level condo building to a 10-building apartment complex to a collection of properties across a city. It can integrate any number of systems from Mitsubishi Electric or any other mechanical equipment manufacturer.

Diamond Controls' strength comes, in part, from **Tridium's Niagara^{AX} Framework** software (Niagara). Tridium, Richmond, Virginia, a global leader in open architecture

automation software and an independent business entity of Honeywell International, Inc., Morristown, New Jersey, has seen impressive growth for almost 20 years. Niagara is customizable, upgradeable and scalable, meaning it can be as simple or advanced as a user desires. The ability to upgrade the framework without replacing components as well as the framework's unlimited scalability means its operational life will exceed that of the systems it integrates.

Allowing managers and owners to maximize their investments, Diamond Controls' product-services package offers the following benefits:

- **Efficiency Gain.** Managing **Variable Refrigerant Flow (VRF) zoning systems** through Diamond Controls maximizes energy efficiency because the systems come with built-in sensors to gauge current operating conditions and adjust accordingly.
- **Lower Cost.** A manager can use the controls to modify cooling or heating, shut off lights, turn off water features, etc. – all around their facility's optimal schedule. Alternatively, a manager can schedule setbacks around the weather forecast.
- **Better Maintenance.** The controls' automatic notifications alert managers when a filter needs changing or when a piece of equipment malfunctions. The trends reports can be equally helpful, for example showing a product's decrease in efficiency and thus suggesting a maintenance concern.
- **Ease of Use.** The Diamond Controls network can be accessed via web browser at any time from any location. Remote access eliminates the tether of touching a physical thermostat to perform system diagnostics.

The challenges of multifamily buildings, from energy allocation to maintenance, are fully satisfied by Diamond Controls. Want to learn more about this new system? Read the product brief [here](#).



SPRING 2015: MULTIFAMILY

When a Multifamily Project Goes Green



The M Station apartments didn't just earn LEED Platinum certification; they exceeded the certification requirements by more than 25 points.

Sunshine Mathon, LEED AP and director of design and development for **Foundation Communities**, Austin, Texas, knows the difficulties of specifying HVAC for multifamily projects. He also knows the success story of using VRF to overcome these difficulties. As Mathon explained, "Before VRF, if a multifamily developer wanted to specify heat pumps for 150 dwellings, he would have to deal with 150 outdoor units – a nightmare of a compressor farm."

Foundation Communities wanted to avoid that nightmarishly inefficient use of space for its recent project, M Station. Mathon and his team set out to create a community for low- to moderate-income households, including families with children, veterans, seniors and the disabled. This is part of Foundation Communities' mission as a 501(c)(3) organization that has provided sustainable, affordable homes and free onsite support services for over 20 years.

To offer that high level of support and sustainability, Mathon's team envisioned a green project. Not just any old green, though: LEED® Platinum certification from the **U.S. Green Building Council**. Ultimately, their project ended up exceeding the certification requirements by more than 25 points.

Mathon said, “I needed to find an HVAC system that would complement our very energy-efficient apartments. I realized that most conventional HVAC systems will not deliver the high bar set for achieving our LEED Platinum goals. I realized that most systems would not size properly – fit size to load. I soon discovered that only VRF engineering could do the job.”

It is no surprise, then, that Mathon selected VRF, or **Variable Refrigerant Flow zoning technology**, from **Mitsubishi Electric US, Inc. Cooling & Heating Division** (Mitsubishi Electric). “We strive to provide first-class housing to our customers. The Mitsubishi Electric system provides best-in-class climate control for tenants year-round. Each unit can be set at a different temperature, depending on the tenant’s preferences.” This individual control ensures personalized comfort while reducing energy usage – a much-needed combination for the project.

Mathon also noted that owners and property managers benefit from VRF’s advanced controls network. Information on the energy usages and performance statuses of all of the equipment throughout an entire complex is displayed on a single PC screen. A manager can conveniently see in real time how each piece of equipment is functioning, making sustainability goals very achievable.

Want to read more about M Station and its LEED Platinum certification? Consult the full case study [here](#).

**SPRING 2015: MULTIFAMILY**

Many Tenants, Many Requirements: VRF Ideal for Multifamily Applications

David Glickman, president, **Glickman Engineering Associates PLLC** (GEA), New York, was called in to specify an HVAC system for the upscale **101 Bedford** apartment complex in Brooklyn, New York. The 340,000-square-foot facility had a tall list of HVAC requirements, including:

- A high-end cooling and heating system that enables energy allocation.
- A system with a discreet appearance and quiet operation to match the building's luxurious design.
- User-friendly control for the tenants.
- Zoning technology.
- A system with a minimal rooftop footprint.
- A system that could accommodate the complex's wide-ranging amenities (e.g., swimming pool, audio recording studio, rooftop event space, spas, wine vault).



The 101 Bedford apartment complex contains 351 luxury apartments and, thanks to VRF, a whole lot of occupant comfort.

Glickman said **Variable Refrigerant Flow (VRF) zoning** technology was the only possible system that could satisfy all of these requirements. He noted that "VRF is ideal for residential applications because its condensing units can serve multiple apartments, while allowing each room to be controlled separately." Glickman was also impressed by VRF's energy efficiency: "The efficiency of VRF is so high that an economizer isn't required. VRF systems can be three to four times more efficient than conventional [packaged terminal air conditioners, or,] PTACs."

The owner of 101 Bedford was a fan of VRF as well, having used it in a previous project: a 98-unit apartment building. Once the decision was made to go with VRF, Glickman said it was a foregone conclusion that the CITY MULTI® system from Mitsubishi Electric US, Inc. Cooling & Heating Division (Mitsubishi Electric) would be chosen due to its sophisticated energy allocation control network. The network calculates the energy used by each apartment, keeping track of all BTUs consumed for cooling and heating.

Ener-Con Technical Services (Ener-Con), Brooklyn, installed the HVAC system at 101 Bedford. Josh Kalimi, president of operations, spoke to the system's smart design. "We didn't need shafts throughout the building to run lots of pipe or ductwork because there are no gas pipes, hot water pipes, flue pipes or chimneys. With fewer roof penetrations, there was more roof space for recreation."

Bernie Gipps, owner, Ener-Con, touched on another important requirement for 101 Bedford: sound. Gipps said the outdoor units operate very quietly. "This is especially beneficial in this project since a large portion of the roof is being used for social activities. With conventional equipment, the noise level would have been too high for people to enjoy a simple conversation on the same roof."

All of the features 101 Bedford required – precise comfort control, quiet operation on the roof and in rooms, low energy consumption, heat recovery, individual billing and ease of installation – were satisfied by the Mitsubishi Electric VRF system. Put together, their end result is a major advance in personalized comfort control and extremely high customer satisfaction.

Want to read more about 101 Bedford? Consult the full case study [here](#).



SPRING 2015: MULTIFAMILY

What Engineers Are Saying About VRF for Multifamily

Multifamily projects involve many parties, each with their own focus. Owners focus on the bottom line, managers on operational efficiencies, architects on design and tenants on comfort. When an engineer specifies the HVAC system, everyone's requests must be considered. Fortunately, **Variable Refrigerant Flow (VRF) zoning** systems make specification easy. Here's how:

- **Smart Technology.** "Most outdoor compressor units spin at only one speed, even when the motor is not loaded. VRF, on the other hand, takes advantage of INVERTER technology by varying the speed of the compressor in the outdoor unit to meet the ever-changing load requirements of each of the indoor zones. An energy-wasting dump zone for excess hot or cold air, as needed with a typical zoning system, is not necessary with VRF." – Doug Happe, HVAC systems engineer, **Emerald Aire, Inc.**, Auburn, Washington on the **Bella Mira Estates**.
- **Energy Efficiency.** "The energy-efficiency of this VRF system [saves] customers 20 to 25 percent on their energy costs." – Grant Middleton, engineer, Applied Equipment Sales, Inc., Seattle, on the **Aljoja Mercer Island Senior Living Community**.



The Doan Classroom Apartments, a century-old national landmark, took advantage of VRF's flexibility to renovate old classrooms into 45 senior living apartments.

- **Lower Cost.** “It was a matter of dollars. The two-pipe system kept the copper cost down.” – Mike Stephenson, mechanical design coordinator, [KW Lang Mechanical](#), Solon, Ohio, on the [Marymount Congregational Home](#).
- **Impressive Flexibility.** “In addition to the great design flexibility of the VRF piping and wiring, the size of the units, both the outdoor compressors and indoor fan coils, played a major role. I don’t know of another system which could make these accommodations.” – Joe Denk, engineer, [Denk Associates](#), Cleveland, on the [Doan Classroom Apartments](#).

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SPRING 2015: MULTIFAMILY

Trends in Green Multifamily Building



The numbers are in and they are *green*. **Turner Construction Company's 2014 Green Building Market Barometer** showed that “62 percent of executives said it was extremely or very likely that their organization would seek **LEED®** certification if constructing a green building.” Meanwhile by this time next year, the green home building boom could be worth up to \$114 billion, said **McGraw Hill**

Construction's New and Remodeled Green Homes report. Even the government is going green, with **Executive Order 13514** stating that all federal buildings must be net-zero energy by 2030.

The multifamily sector is looking equally green. Seattle recently completed its **first passive multifamily** facility, related building costs are **coming down** and the **ENERGY STAR** certification system has just been opened to multifamily facilities.

The government is also pushing for a greener multifamily sector. The Department of Energy and the Department of Housing and Urban Development recently partnered to expand the **Better Buildings Challenge** to multifamily projects. The challenge aims to reduce energy consumption by at least 20 percent over 10 years.

Who wants all these green multifamily units? Millennials and baby boomers certainly do. Young professionals are drawn by green certification for its eco-friendliness. Older renters and buyers are drawn by green facilities' clean and healthy environments.

“To stay competitive as the market becomes greener,” a **report from the National Association of Home Builders** (NAHB) recommends that industry members “gain more

green experience.” There is good news for professionals heeding this advice: money. The same report states that “59 percent of multifamily builders, developers and remodelers find that green homes are easier to market than traditional homes.”

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