



PROJECT INFORMATION

Building Type: Retrofit
Project Type: Multi-family Housing
Year of Install: 2018
Square Footage: 20,000
Number of Floors: 3
Number of Zones: 24
Owner/Developer: Dale Howey
General Contractor:
Chris Kallstrom,
Residential Heating &
Air Conditioning, Inc.
Daikin Sales Representative:
Mark Godfrey,
Stevens Equipment Supply

CHALLENGE

The owner wanted complete HVAC rehabilitation from natural gas boiler system to high efficiency electric heat pump to reduce carbon footprint. The new system must accommodate previous electrical outlets as well as the new electrical layouts, all while keeping the historic structure intact. The solution must include individual tenant control over the heating and cooling while efficiently operating through the harsh winter conditions.

SOLUTION

Daikin inverter technology dramatically reduced installation costs when compared to both hydronic and traditional ducted systems and minimized architectural alterations to the historic building. The combination of Daikin equipment with solar PV reduced Appleton Villa's carbon footprint while offering more usable space and providing tenant controlled year-round heating and cooling comfort.

In the famous "Twin Cities" area lies Appleton Villa Apartments, a refurbished, historic 1918 building located in downtown Minneapolis – only a mile away from the US Bank Stadium. The urban living apartments have a reputation for being eco-conscious - offering bike parking stations, recycling services, and urban gardens for its residents. When the time came to update the building's outdated HVAC system, Daikin residential and ductless products with inverter technology rose to meet Appleton Villa's needs.

Green Rock Apartments LLC Owner, Dale Howey, wanted Appleton Villa to be more environmentally proactive. It was important to Howey that the new system be powered from electrical sources to reduce the building's carbon footprint. The building was built in the early 1900s and still operated from the original boiler system, which ran off of coal and, more

recently, from natural gas sources. The building also didn't offer any air conditioning in the summer and the boiler was housed separately in a large mechanical room. The boiler system simply wasn't energy or cost efficient, didn't offer individual resident control, and, in turn, was difficult to charge independent tenants based on their energy use.

Howey wanted to keep the historic brick structure intact throughout the project, so, it would be necessary to have a non-invasive HVAC solution. Chris Kallstrom from Residential Heating & Air Conditioning suggested Daikin ductless products to ensure a minimal amount of alterations to the glamour of the historical structure and preserve the urban feel of the apartments.

Kallstrom also solved Howey's concern of how to charge for individual resident energy usage by offering *AURORA* indoor wall-mounted units. Each *AURORA* system is equipped with a handheld controller that allows each resident the ability to set their own comfort.

To further Appleton Villa's objective to become environmentally proactive, Howey had a goal for Appleton Villa to become carbon neutral. To help toward that goal, Howey installed grid-tie rooftop solar photovoltaic (PV) panels to assist with the carbon reduction efforts. The solar panels, combined with the Daikin inverter system technology, minimizes peak energy spikes to reduce energy

consumption. "By installing Daikin equipment with the PV panels, I've already seen initial energy savings, and I'm looking forward to seeing the true savings amount at the end of this year" stated Dale Howey, Owner. Individual electric meters were connected to the individual *AURORA* systems providing independent electrical usage and billing, offering more flexibility and control for resident desired comfort.

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Residential Heating & Air Conditioning recommended the *AURORA* inverter heat pump, engineered for extreme weather conditions, which was ideal for the harsh winter weather Minnesota experiences. Kallstrom and his team proved knowledgeable in recommending *AURORA*, as it was truly put to the test in the winter of 2018/2019 – with the historical eastern U.S. polar vortex – where nighttime low temperatures never rose above 0° F for over 20 straight days. “The Daikin

equipment performed as expected, flawlessly and without any issues the entire time,” stated Dale Howey, Owner.

Another distinct advantage that Daikin product solutions brought to Appleton Villa Apartments was the ability to reclaim the space from the old boiler system, which was now no longer needed. With his tenants in mind, Howey repurposed the large mechanical room into a new, state-of-the-art gym

facility, further promoting Howey’s goal of tenant wellness.

The success of the retrofit was in large part due to the collaborative efforts from Chris Kallstrom and Residential Heating & Air Conditioning, as well as Dale Howey and Stevens Equipment Supply — Eagan, Minnesota, who provided on-going support throughout the project.



DAIKIN EQUIPMENT

- (16) 1.25-ton RXL15 *AURORA* Heat Pump Outdoor Units
- (16) 1.25-ton FTX15 *AURORA* Indoor Wall-Mounted Fan Coils
- (8) 1-ton RXL12 *AURORA* Heat Pump Outdoor Units
- (8) 1-ton FTX12 *AURORA* Indoor Wall-Mounted Fan Coils

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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