absolute comfort case by case

Daikin Inverter Technology Helps Assisted Living Facility Exceed LEED Gold Standards

The Challenge

Design and build a sustainable assisted living facility that delivers energy efficiency even in New Jersey's cold winter

Daikin's Solution

Unite Daikin's systems with energy saving building techniques resulting in a facility that is nearing zero energy consumption.

Application:
Assisted Living Facility

Location:
Tewksbury, New Jersey

When a New Jersey United Cerebral Palsy affiliate first conceived the idea of an affordable housing community for people with disabilities, the vision was simple: conventional wooden structures heated and cooled by a standard Packaged Terminal Air Conditioner systems known as PTACs. By the time the community welcomed its first residents at the end of 2007, the design had evolved dramatically to comprise of a smart and energy-efficient HVAC system with innovative elements of sustainable design, making it one of the most outstanding examples of green development in the state.

Today, The Meadows at Oldwick, developed by the not-for-profit United Cerebral Palsy of Northern, Central and Southern New Jersey, exceeds LEED Gold standards with its on-site solar-powered energy production exceeding residents' energy needs, its thermal Insulating Concrete Forms (ICF) construction, and its inverter heat pump system by Daikin AC that is thus far 54% more energy efficient than the standard set by

Daikin systems require a very low starting current to begin operating, making them a perfect fit for the solar powered energy production used by this assisted living facility in New Jersey.

the latest International Energy Conservation Code.

"By the time our team hung its last window shade and opened the doors of this community, it had become a prototype of green development for other low-income affordable housing projects," said Peter Ypsilantis of Integrated Green Technologies (IGT), Inc. who served as construction manager/builder on the project. IGT had been contacted by Tim McCorry of the architectural firm of Kaplan, Gaunt & DeSantis to help transform the design of the community located in Tewksbury Township into a model of sustainable development. "One of the first things we did after deciding to go with ICF construction was to revamp the HVAC system design. At its core is a Daikin Variable Refrigerant Volume® system that includes a built-in intelligence providing precise temperature control in every room. This was very instrumental in our goal to conserve energy," said Ypsilantis.

Peter Ypsilantis of Integrated Green Technologies, the Construction Manager and Builder for The Meadows of Oldwick, points out the features of the Daikin 36K Btu/h VRV®-S heat pumps which supply conditioned air to the two-bedroom units.

"...one unit recently paid only $2.02 for heating, cooling, domestic hot water, lighting, and all appliances for a 30-day period."

Brad Kennedy
Manager, United Cerebral Palsy

The Meadows at Oldwick is a single-story structure covering about 20 percent of a two-and-a-half acre site, with 18 apartments, 11 of which are one-bedroom units while the others are two-bedroom units. The development/design/build team of Ypsilantis, McCorry, and Brad Kennedy, Housing Development Manager for United Cerebral Palsy, decided on incorporating the Daikin VRV heat pump system into the design for a number of reasons, including its lower operating costs, especially under partial load conditions, its quiet operation, and its ability to deliver adequate heat in the cold Northeastern winter. "We knew we wanted to go with an energy-efficient heat pump system, but our research found that only the Daikin system could give the residents the heat they needed, even in below-freezing temperatures. The other heat pump systems we looked at could not guarantee the same performance in very cold weather," Ypsilantis explained.

"Daikin's heat pump system was chosen because of its lower operating costs ... quiet operation, and its ability to deliver adequate heat in the cold Northeastern winter." Peter Ypsilantis, Integrated Green Technologies

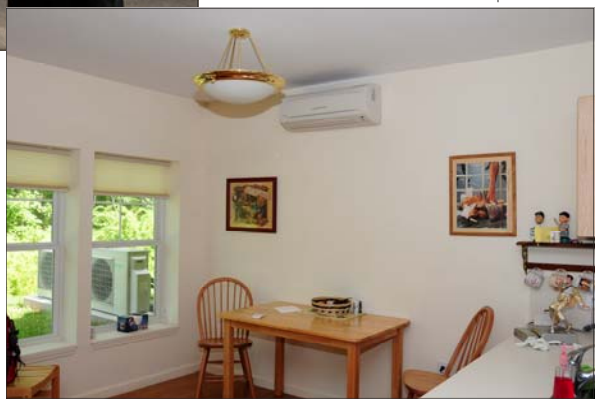
A mix of Daikin equipment was specified for the project,

including eleven 18,000-Btu/h outdoor units for the one-bedroom homes. Each is connected to two indoor wall-mounted CTXS fan coil units individually controlled by wireless remotes. “Having temperature control of each room is essential to Energy Star certification, which was a credential mandated by the government funding we received,” Ypsilantis said.

He worked with HVAC contractor, R.J. Groner Inc., to complete the installation, which also included seven Daikin 36,000-Btu/h VRV-S heat pumps for the two-bedroom apartment units, each of which was connected to three wall-mounted fan coil units in the space. “The variable refrigerant configuration automatically sizes the system to exactly what is needed, which was another benefit to the community and its goal of sustainability,” Ypsilantis noted.

R.J. Groner field supervisor, Matt Eisley said this was the first time he had installed a Daikin system. “Our customers really like not having window air conditioners, the quiet operation [which can be as low as 28 decibels], and the ability to zone each room,” Eisley noted.

With the photovoltaic roof arrays visible on the roofs (from left) Brad Kennedy, Housing Development Manager with the United Cerebral Palsy organization, Andrew Smith, his associate, and Peter Ypsilantis discuss the energy output of the system.



The one-bedroom units at the affordable housing community for people with special needs are heated and cooled by 18K Btu/h Daikin outdoor units.

“The installation of the Daikin system went very well.” The REFNET™ copper piping system optimizing refrigerant flow was easier to install than standard T-joints and headers, he noted.

EXCEEDING EXPECTATIONS

So far, the sustainable design of is more than exceeding anyone’s expectations. Brad Kennedy of United Cerebral Palsy said the affordable housing community was very satisfied with the building’s performance.

He gave the example of one unit which recently paid only $2.02 for heating, cooling, domestic hot water, lighting, and all appliances for a 30-day period.” Everyone seems happy with the living situation,” he said.

It seems hard to argue with the results so far. Besides the extremely low energy costs, the community’s HVAC system has been delivering up to 17 SEER rating for cooling and an 8.5 Heating Season Performance Factor for heating without the use of any electrical resistance heat.

The photovoltaic roof arrays have more than exceeded original forecasts of a 45% electricity cost reduction.

The Energy Star Certification has a Home Energy Rating as low as 43, which equates to a project more than three times as efficient as the standards set by Energy Star.

The green design, which includes dozens of measures in site sustainability all add up to a comfortable community that its residents are proud to call home, according to UCP’s Kennedy.

FACILTIY WINS NJ'S TOP AWARD FOR GREEN DEVELOPMENT!

Integrated Green Technologies receives award for Outstanding Sustainable Award.

Peter Ypsilantis of Integrated Green Technologies knew the community he helped create was truly an innovative affordable housing development, and a prestigious award from New Jersey Governor, Jon Corzine made it official.

Each year, the New Jersey Housing & Mortgage Finance Agency honors organizations at the Governor's Conference on Housing and Community Development for investing in communities and providing quality affordable housing in New Jersey. In 2008, the Governor's Excellence in Housing Awards chose the United Cerebral Palsy of Northern, Central and Southern New Jersey for The Meadows at Oldwick for it's Outstanding Green/ Sustainable Development Award.

The 18-unit multi-family supportive housing apartment complex for individuals with special needs incorporated a wide variety of green features in its construction that helped earn it the award. "We were proud to be able to let other organizations learn about our affordable project and how they can achieve the same level of energy efficiency in their new facilities," said Ypsilantis.

Additional Information

Location

Property
The Meadows at Oldwick
501-1202 Fisher Road
Oldwick, NJ

Product Profile
Daikin Equipment

Daikin Product Profile

22	CTXS09GVJU	Indoor wall-mounted unit
11	2MXS18GVJU	Outdoor unit 18K Btu/h
7	RXYMQ36MVJU	VRV®-S heat pump 36K Btu/h
14	FXAQ07MVJU	7K Btu/h
7	FXAQ12MVJU	12K Btu/h
14	KHRP25M22T	2-pipe REFNET™ joint
21	BRC1D71	7-day programmable controller

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