

# RenewAire Case Study: Brentwood Senior Communities



## *Quality of Life*

In 1864, a logging company built a storage dam on the site of a former wild rice bed in northwest Wisconsin. Seven years later, the city of Rice Lake was founded when the first permanent settler opened a store, hotel and blacksmith shop to serve the loggers who worked in the area. The settlement grew to become a center for the lumber industry well into the 20<sup>th</sup> century. Today, with a population of about 13,000, Rice Lake is the largest city in Barron County.

For its size, Rice Lake has a lot to offer. Summer tourists enjoy boating and fishing, golf, summer theater, and concerts in the park. Hunters come in the fall, followed by skiing and snowmobile enthusiasts in winter. Year-round residents take advantage of specialty shopping, a library, symphony, and two colleges.

These amenities could explain why Dave Barta decided to build the Brentwood Senior Communities in Rice Lake. The first phase of the complex, an assisted living facility, opened in 2004. Brentwood residents have their own apartments and control their daily routines. They decide how much help they need with housekeeping, daily living activities, and health care. They can go into town or take part in the activities at Brentwood. And thanks to the integration of a RenewAire energy recovery ventilator (ERV) with a Mitsubishi City-Multi heating and cooling system, they can precisely control the temperature in their apartments while enjoying the healthful benefits of fresh air ventilation.

## *Little Things Mean a Lot*

As they grow older, people become increasingly sensitive to the temperature, whether hot or cold. A small difference in degrees makes a big difference to their comfort. That's why Brentwood owner, Dave Barta, said, "One of the biggest challenges with this facility would be to find a heating and cooling system that would keep all the tenants comfortable all the time."

Barta had to consider more than the residents' exacting standards for temperature control. Brentwood would be home to dozens of older people who were susceptible to infection and disease, and who would interact every day. The rate of air exchange had to keep the air fresh, and the humidity and concentration of pathogens low. The heating and cooling system Barta chose would be called upon to condition a high volume of outside air – both winter and summer.

There was also the fact that at any time, the need for heating and/or cooling could differ from one part of the building to another. For example, the morning sun might be strong enough to make some units in the south wing uncomfortably hot, while residents of the north wing might want more heat. So the temperature in each apartment had to be individually controlled, and the system had to be able to heat and cool simultaneously and precisely.

Barta began to weigh his options. First, he considered hydronic heat plus wall units for each apartment. However, it soon became clear that neither of those products could provide the precise temperature control he wanted. Further, they could be expensive to operate and maintain.

### *Independence with Tailored Support*

Ervin Dirks of Dirks Heating and Cooling told Barta that he knew about a new product that could meet Brentwood's temperature control challenge — the Mitsubishi City-Multi. In fact, Mitsubishi had trained Dirks' staff to sell and design the product, which had just been introduced in North America. The City-Multi can heat and cool up to 14 units simultaneously — and precisely — by shifting energy from one area to another. In other words, it moves warmth from an apartment that's too hot (thus cooling it) to one that needs heat.

To meet the challenge of efficiently bringing in a large amount of fresh air, Dirks proposed pairing the City-Multi with another high-tech product, the RenewAire energy recovery ventilator (ERV). "I'd used RenewAire before," said Dirks. "I knew that it would meet all the standards, control the humidity *and* lower the heating and cooling costs."

With RenewAire's *static-plate* technology, outgoing and incoming air streams flow through an exchange core constructed of highly engineered hydroscopic resin. In summer, heat and humidity from the incoming air is transferred to the outgoing air stream. In winter, incoming cold air is warmed up by heat recaptured from the outgoing air. In this way, the demand for both heating and cooling is significantly reduced. Also, since RenewAire transfers moisture as a gas, there is no need for the drains or condensate pans which make other ERV products more costly to operate and maintain.

A third component completed the system. Because winter temperatures can drop to well below zero in Rice Lake, Dirks included a hydronic preheat coil as a cost-effective way of insuring acceptable comfort levels on even the coldest nights.



## *Golden Years*

Mitsubishi has specific guidelines for the City-Multi's ductwork and refrigeration lines. Dirks had an engineer draw up the plans, and installation went smoothly. Dirks knew the system was golden even before the facility opened. He gave it a trial run while the building was still "green." "The relative humidity inside was 75% when we closed the place up one Friday afternoon," Dirks said. He thought it would take about a week to dry everything out. When he entered the building on Monday morning, however, Dirks was pleasantly surprised to find the humidity level already well within acceptable limits.

Two years later, Barta says, "(The system) has passed the hardest test of all — not one resident has complained about the temperature or air quality."

Along with the expected economies in heating and cooling costs, the RenewAire/City-Multi duo has delivered another significant cost saving. "The RenewAire ERV does a great job of pre-heating incoming air," Dirks explained. So the back-up hydronic heat is seldom needed.

The RenewAire ERV is providing other benefits as well.

- The regular replacement of indoor air protects the health of Brentwood's residents by reducing the spread of germs. Incoming and outgoing air are completely separated when they pass through the ERV's exchange core. In fact, RenewAire is the only ARI certified ERV with 0% exhaust air transfer at normal, balanced operating conditions. So there's no risk of returning germs to the facility with the incoming air.
- Static-plate technology means there are no rotating wheels or dampers. So RenewAire runs quietly, will last longer than more complex equipment, and makes maintenance easy and safe.

Brentwood's assisted living combines independence and support to give residents a full life. The pairing of RenewAire ERV with the Mitsubishi City-Multi system has also given them both comfort and control. The two have also satisfied Dave Barta, who is considering using them when he builds the next phase of the Brentwood community. And Ervin Dirks is proposing to team them up again in a school building project.

