



Boston, Massachusetts

THE DISTILLERY NORTH APARTMENTS

CHALLENGE

Selecting a highly-efficient HVAC system that could help a building achieve Passive House status

SOLUTION

Zoned Comfort Solutions® from Mitsubishi Electric

RESULT

Passive House multifamily complex and proud tenants that are saving on utilities



The Distillery North Apartments (The Distillery North), located in South Boston, embody the values of the local community: arts, culture and sustainable living. The 28-unit complex follows the Passive House model, a building standard aimed at true energy efficiency, comfort and affordability. With strict energy standards, the complex required a highly-efficient HVAC system. After consulting with a team of industry professionals, the choice was clear: Zoned Comfort Solutions® from Mitsubishi Electric.

In 1984, Fred Gordon, principal owner of Second Street Associates, LLC, Boston, bought an old, **100,000 square-foot rum distillery originally owned and operated by Felton Rum. Five generations of the Felton Family made distilled rum in New England for 150 years.**

"I just fell in love with it," said Gordon of the warehouse. "It was a building that nobody wanted, in a part of the city that nobody wanted to be in and I, in certain ways, predicted that the whole thing

would turn around."

Fast-forward to the mid-1990s, Gordon was determined to use the space to contribute to the environmental movement. **He bought the rest of the city block and in 2009 decided to build a multifamily Passive House on the distillery property.** As the low-energy building movement was relatively new at that time, Gordon expended significant effort researching energy-efficient systems.

"The Passive House movement involves a huge amount of discussion about products," noted Gordon. "If you went to the conferences both in Germany and in the U.S., which I did, there was all this buzz about air-source heat pumps. Air-source heat pumps were a revolution in terms of technology, energy efficiency and cost."

Richard O'Dwyer, consulting principal, ICON Architecture, Boston, Massachusetts, was one of the architects brought on early to The Distillery North team. He explained

that product research and selection was a collaborative effort.

“We were excited by the prospect of developing a project that would be intensely energy-efficient with a very low carbon footprint, that would deliver very clean air to breathe,” said O’Dwyer. “Fred had a great team of experts in the field; he brought in a Passive House architect from Germany who had extensive experience with the constructability of larger Passive House projects and also local professionals who were familiar with smaller Passive House structures to assist in the process.”

Targeting energy reductions of at least 60 percent, Gordon and his team had to tackle two issues to attain Passive House status: cut energy loads down as much as possible and use green power to assist in covering those loads. The Passive House Standard developed by the Passive House Institute also has strict benchmarks surrounding cooling and heating, requiring the building to have controlled mechanical ventilation with heat recovery (MVHR). After 100 photovoltaic solar panels were selected to help bring in green energy, Gordon knew a highly-efficient HVAC system with air-source heat pumps and heat exchangers that could perform MVHR functions was needed.

Sarah Carter, project manager, Petersen Engineering, Portsmouth, New Hampshire, was one of the engineers who helped specify Mitsubishi Electric’s ductless system for The Distillery North. She said, **“The loads are greatly reduced in a Passive House type of building so there needs to be equipment that’s available in small capacities.** A lot of equipment’s preset sizes would all be considerably oversized in a Passive House building, especially if they are for one- and two-bedroom apartments.”

With this in mind, Gordon decided to create a trial period for all the equipment in the rum distillery

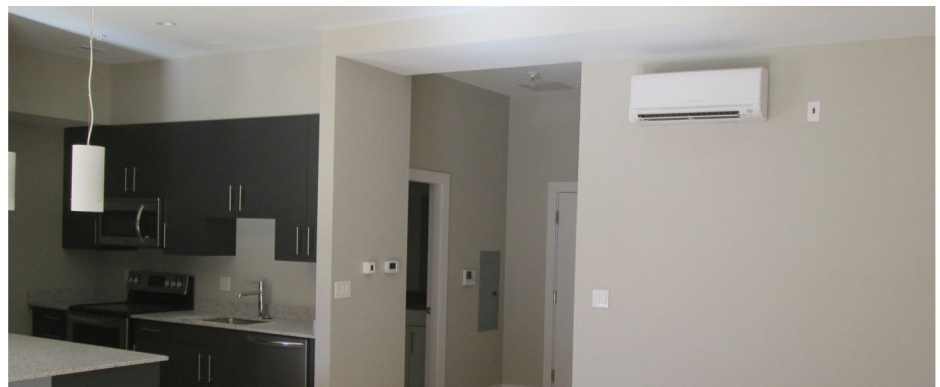
before breaking ground on the multifamily complex. “We took a tenth of the existing building and retrofitted that with all of the equipment,” he explained. “We had about four years experience with all of the HVAC equipment before we made a commitment to a really major construction.”

In their design, Petersen Engineering selected ductless M-Series systems for each unit of the complex. **Utilizing INVERTER-driven technology, M-Series was an ideal choice for a multifamily Passive House because each unit only uses the exact amount of energy required to cool or heat a space.**

Zoning allows for optimum occupant comfort, with substantial energy savings for the building owner.

Carter also knew they could count on Mitsubishi Electric to answer any questions they had during development. **“In general, we get the best service from Mitsubishi Electric. Service from our sales rep, helping with selections, troubleshooting and anything that comes up...they’re always ‘on the job.’ It goes a long way in our world.”**

Having spent much time in the renovation field, Gordon agreed, too. “We’ve heard of other people



who got stuck with products that did not have sufficient infrastructure behind them to make sure they worked right. We have had no problems here—Mitsubishi Electric has been a trooper!”

The Distillery North Apartments have been open for tenancy since April 2017. Gordon and his wife, who actually live in the building, have been quite pleased with the first round of energy performance figures. Between the solar panels, positioning of the complex and an energy-efficient HVAC system, Gordon and his colleagues at Second Street Associates believe the utility savings are a real perk for residents.

“For heating and cooling, we’re talking \$65 per unit, per year,” said Gordon. “And a lot of the units that are south-facing, you just don’t turn the heat on. We are about 30 to 35 degrees warmer without any heat whatsoever. **The heating and cooling here are less than a cappuccino from Starbucks.**”

O’Dwyer also believes The Distillery North has been a success from both an energy conservation and an

aesthetic standpoint. Throughout the course of the project, the team found that some developers in the field were worried that the strict building envelope and efficiency standards of the Passive House guidelines would impact curb appeal.

“I think we’ve demonstrated with The Distillery North that we have a very contemporary building that ties in very nicely with the existing distillery building, which dates back to the 19th century,” O’Dwyer said. “Although incorporating the constraints of the Passive House model into the project was a challenge, with the right concept and a thoughtful design process those constraints ultimately enhanced the aesthetics of the final product.”

With the Passive House movement growing in popularity, Gordon is already developing another low-energy building on the property. This will add 37 apartment

residences, six commercial spaces, an indoor theater, a grocery store and a 2,600 square-foot greenhouse. Gordon has big plans to turn his block into a community that celebrates both the arts and the outdoors. After being in the neighborhood for 30 years, local institutions and residents are embracing it.

“This is a place which is really protected; people feel really comfortable,” he said. “In the end, we’ll have 300 people on-site, so it’s big enough to actually create a culture of its own.”

After years of collaboration with multiple green energy professionals, and the energy savings to back it up, Gordon has finally brought his Passive House to fruition. He noted, “Passive House is a very high bar, but we have way exceeded it. This building is something of a miracle.”

PROJECT TEAM

Owner/Developer:

Second Street Associates, LLC, Boston, Massachusetts

HVAC Engineer:

Petersen Engineering, Portsmouth, New Hampshire

HVAC Contractor:

Mechanical Air of N.E., Inc., Greenland, New Hampshire

Architect:

ICON Architecture, Boston, Massachusetts

Distributor:

Homans Associates, Wilmington, Massachusetts

EQUIPMENT

- ▶ (25) MUZ outdoor units
- ▶ (29) MSZ indoor units
- ▶ (3) SUZ outdoor units
- ▶ (3) SEZ indoor units
- ▶ (2) MXZ outdoor units
- ▶ (2) PUY outdoor units
- ▶ (2) PKA indoor units
- ▶ (34) MHK1 wireless controllers