



COMPLETION DATE

April 2013

PROJECT TEAM

HVAC Engineer:

Zero Energy Design, Boston

HVAC Contractor:

Clay's Climate Control,
Linwood, New Jersey

Distributor:

Lyon Conklin,
Halethorpe, Maryland

CHALLENGE

Selecting an energy-efficient cooling and heating system for a sustainable home

SOLUTION

Zoned Comfort Solutions™
from Mitsubishi Electric

RESULT

An unobtrusive system that offers low energy bills and superior performance

In 2013, when Kirsten and Joseph **decided to build a new 2,600-square-foot, resilient home in the coastal town of Margate, New Jersey**, for their family, they wanted to ensure that every feature in the house was energy-efficient. Therefore, when it came time to select the home's cooling and heating system, the couple needed to find a system that would save energy while also providing comfort and blending in aesthetically. The solution: Zoned Comfort Solutions™ from Mitsubishi Electric Cooling & Heating (Mitsubishi Electric).

"We originally wanted heated flooring but it was very expensive, and then when we looked into HVAC, we wanted something energy efficient. We also wanted to make sure that our house would have good indoor air quality," said Kirsten.

With specific needs in mind, the couple contacted Jordan Goldman, engineering principal, ZeroEnergy Design, Boston, for a solution. He said, "We were hired as the architect on the project. Our firm, ZeroEnergy Design specializes in high-performance homes, so homes that use a fraction of the amount of energy that a traditional home would use."

He continued, **"It's a two-story home above a vented crawl space, and the first floor is completely raised above ground to make it flood-resistant. Energy efficiency, comfort and indoor air quality were the specific objectives for finding a system."**

Goldman believed that a zoned system would meet Kirsten and Joseph's objectives. He said, "It's an all-electric house. We like to decouple the homes from the natural gas infrastructure. This is to accelerate the transition to a renewable energy grid as well as avoid new and additional environmental impacts that come with gas infrastructure. We wanted to ideally remove combustion from the house because combustion byproducts like carbon monoxide are potential indoor air quality contaminants. So given

all of that and the fact that the house's heating demand is 75 percent less than a code-built house, air-source heat pumps were a great option for this particular house."

He continued, **"With the home's airtight construction, it has a fraction of the heating demand. Air-source heat pumps were the appropriate choice. The smallest boiler or furnace and any other gas appliance would have been several times oversized on the coldest day of the year."**

The couple agreed with Goldman's recommendation. "We really relied on ZeroEnergy Design. We were trying to build the most energy-efficient home we could within our budget. Not only are these units energy efficient, but they also provide comfortable heating and air conditioning."

With the technology selected, Goldman immediately recommended Zoned Comfort Solutions from Mitsubishi Electric. **"We've used Mitsubishi Electric systems on dozens of projects. They've had a long track record of solid performance and reliability, and there is a really broad installation and service network, which are all helpful things."**

He continued, "On this particular one, it's kind of an open-floor plan on the first floor and all of the bedrooms are on the second floor. The choice for a Mitsubishi Electric system was also a balance of cost and performance."

With the technology and brand selected, installation began. Mechanical contractor, Clay's Climate Control, Linwood, New Jersey, and distributor Lyon Conklin, Halethorpe, Maryland, helped ease the process and made it a smooth experience for the project team and homeowner. According to Kirsten and Joseph, the process seemed "simple and inexpensive compared to other systems."

Goldman said, **“The first floor has two wall-mounted systems, one in the living room and kitchen and the other in a room that can be converted into a bedroom. There’s also a ducted unit that serves the second floor. With one piece of equipment, we could get air conditioning and heating into every room.”**

In terms of comfort, the system has fulfilled the couple’s initial objectives. Kirsten said, **“I don’t have any complaints; I find the system very easy to use. Because my house is so energy-efficient, it traps the heat in. The units reach the set temperature fairly quickly and maintain that set temperature.”**

Kirsten and Joseph have also appreciated the system’s sleek look. Kirsten said, “The units are unobtrusive; they are relatively small and blend in with our walls so that we don’t even notice them.”

Although Goldman hasn’t received much feedback, he said that’s a good thing. “Normally, if there’s a problem, we will hear about it. Comfort seems great. The system is performing well and the envelope is also performing well.”

Since using the system for over four years, the couple also has enjoyed the system’s easy maintenance. “There’s not really much to it. The units are easy to maintain by changing the filters and we have not had any mechanical problems.”

Goldman also said about maintenance, “They replace the filters on the indoor units every three months. They have a service contract for maintenance to wash the condenser coils since they’re located on the coast to prevent any buildup or corrosion. But one of the nice things about the building envelope is that we could make their system smaller and simpler which is simpler to operate and maintain and less expensive to install.”

In addition to being energy efficient, Kirsten and Joseph’s home qualified to be a **New Jersey ENERGY STAR® certified home under the Residential New Construction Home program. This esteemed qualification falls under New Jersey’s Clean Energy program that promotes energy-efficient living throughout the state.**

Goldman said, “It required drastic levels of energy reduction – a 50 percent overall energy efficiency improvement on the design level and a solar panel array to make up at least 50 percent of the balance energy. When you count for solar too, that’s 75 percent less energy than a standard home. They got a \$15,000 incentive for the project; it was a pretty substantial rebate.”

Now with Zoned Comfort Solutions, Kirsten and Joseph can offer their family not only an energy-efficient oceanfront home but also a comfortable one with year-round, reliable technology.

