MITSUBISHI ELECTRIC
HEATING & AIR CONDITIONING

Cramerton,
North Carolina

THE VILLAGES AT CRAMERTON MILLS

CHALLENGE

Selecting an energy-efficient HVAC system to offer cost savings to a community of sustainable homes

SOLUTION

Zoned Comfort Solutions® (Variable-Capacity Heat Pump) from Mitsubishi Electric

RESULT

A successful green community with low utility bills and superior comfort

In 2010, civil engineer Nicholas Parker decided to bring sustainable living to North Carolina. He wanted to offer homebuyers a sustainable lifestyle for the same price as traditional construction. To do so, Parker started planning a community that would be filled with some of the Carolinas' greenest single-family homes in addition to multifamily housing, retail and office space. To make this dream a reality, Parker formed his own company called Green Street Cottages, Charlotte, North Carolina. Within six years, Parker built The Villages at Cramerton Mills (Cramerton Mills) – a housing development in the city of Cramerton. So far the development has **five energy-efficient homes certified under the U.S. Department of Energy's (DOE) Zero Energy Ready Home program, and there are plans to erect 500 more.** To provide a great living environment for each family, Parker needed a cost-saving, comfort-providing cooling and heating system. That's where Hyper-Heating INVERTER® (H2i®) technology from Mitsubishi Electric Zoned Comfort Solutions® enters the story.

"In order to get the traditional homebuyer to buy green, you have to build a home that's competitive with the standard home. That's why cost was a big factor for us. If green features are too costly, then you're going to struggle selling it to an average family," said Parker. For cooling and heating, that meant finding an energy-efficient system that contributes to high indoor air quality but that is also cost-effective enough to attract homebuyers to green living.

To start the research process, Parker contacted local HVAC contractor, Travis Donaldson, to find a solution for the homes. Donaldson, manager, Temperature Design, LLC, Mooresville, North Carolina, said, "Normally, most builders for large communities will install systems that consume 70 percent of the home's

energy, but Cramerton Mills was totally different. They wanted a system that would keep the utility bills as low as possible for homeowners."

With energy efficiency as a top priority, the project team began to analyze multiple types of systems to see which could cool and heat the homes adequately. Parker said, **"We looked at hydronic air-handling systems and efficient traditional ducted systems, but that's where split-ductless won because of its edge with not only efficiency but also indoor air quality and cost."**

With zoned technology settled on, the project team solicited multiple manufacturers. They analyzed each product to see whether it could not only meet the aforementioned needs but also help the houses achieve DOE's Zero Energy Ready Home certification. **Mitsubishi Electric won the job with its latest zoned technology products. "We would have been happy to find a system that could meet two out of our three criteria, but with Mitsubishi Electric we found all three,"** said Parker. Donaldson agreed that Mitsubishi Electric was the brand of choice: "As far as I'm concerned, Mitsubishi Electric is the innovator of ductless systems."

Before fully installing the Mitsubishi Electric units, the project team decided to test them in an occupied pilothouse located in York, South Carolina. Parker said, "Once the units were installed in the pilothouse, I was impressed. It's an extremely quiet system. The tenants in the house even noticed improvements to their respiratory health."

With a successful installation in the pilothouse, the selection of Mitsubishi Electric zoned technology for Cramerton Mills was official. The project team, Mitsubishi Electric and the distributor – Ferguson Enterprises, Newport News, Virginia – together designed the systems for the homes. Donaldson said, "We all collaborated to design the ultimate cooling and heating system for a house. These systems were sized perfectly for the homes – they will provide ultimate comfort. With the variable speed technology and constantly modulating compressors, these heat pumps are always going to meet the load size."

Since the easy and quick installation in the first five homes, the zoned technology has lived up to the project team's expectations. Donaldson said, "We did four 1-to-1 systems per house. The systems achieved **30.6 SEER and were able to keep the houses at net-zero. You're not going to get ratings like that from another kind of system."** Donaldson also noted that the system has proven to be very reliable in terms of comfort. "When we walked through the homes after start-up, we were taken aback by the hyper-heat and how well it can actually heat the house. Each room was comfortable from the moment you walked in." Parker said the experience since installation has also been very positive for the homeowners. "The homeowners absolutely love the units. The comfort is stellar." Donaldson agreed: **"The new homeowners will get to enjoy the comfort of their house in**

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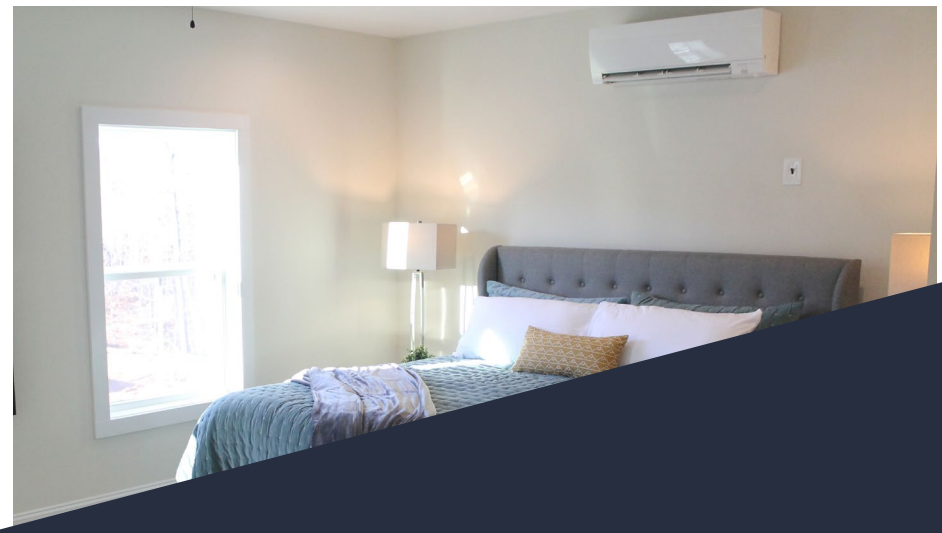
>
> **— Travis Donaldson, manager, Temperature Design, LLC**

addition to low utility bills. They'll truly enjoy this green community."

Donaldson also discussed easy controls and maintenance: "Each wall-mounted unit is controlled by a remote. Homeowners can change the control from wherever they are in the home. As for maintenance, it's as easy as changing filters in a house with a standard system, except it's even easier."

Cramerton Mills recently held an open house for potential prospective buyers to view the community and experience the comfort in the homes. Parker said, "Initially, potential buyers were curious about the wall-mounted units, so the reps from Mitsubishi Electric helped them understand the technology. Ultimately, the buyers said they were intrigued about the units and liked how they operated." With Mitsubishi Electric zoned technology, Cramerton Mills can now offer traditional homebuyers comfortable, green living at an affordable price.



EQUIPMENT

- (16) MUZ M-Series Outdoor Units
- (16) MSZ Wall-mounted Indoor Units

PROJECT TEAM

Developer:
Green Street Cottages, Charlotte, North Carolina

HVAC Contractor:
Temperature Design, LLC, Mooresville, North Carolina

Distributor:
Ferguson Enterprises, Newport News, Virginia