From in the Home to Outer Space

Discover the innovation that drives us →
Mitsubishi Cooling and Heating

1980

Established US operations
Pioneered Ductless Technology
Innovative leader in HVAC
Opened new facility

Over 600,000 sq ft

Testing and Engineering labs
Mitsubishi Cooling and Heating

2017

Market leader with broad product line of ductless and ducted

Most experienced service and technical team

Comprehensive distributor and Training network
Ingersoll Rand, Mitsubishi Electric to Establish Joint Venture for Ductless, VRF Systems
PC Team

Build Better

2018 program
performance
construction
TINY HOMES

Mustard Seed
Atlanta, GA

HP HOMES

Collier Construction
Chattanooga TN

CUSTOM

Wishbone Homes
Asheville, NC

HFH HOMES

Catawba HFH
Hickory, NC
LUXURY
Magleby Construction
Salt Lake City UT

MODULAR
Deltec Homes
Asheville NC

PRODUCTION
PSW Homes
Austin TX

SIPS CONST
Eco Panels
Mocksville NC
strategic partnerships

learn, network, and promote
partnerships

Southface

EEBA

Passive House Institute US
partnerships
partnerships
Split-ductless + ducted systems with variable-speed compressors use only precise amount of energy needed to meet a space’s actual load at any given point of time.

**Increase Efficiency and Durability**

**CONVENTIONAL**

Variable-speed compressor reaches set point faster

**VARIABLE-SPEED COMPRESSOR**

Poor temperature control means inefficient use of energy

Minimal temperature fluctuation means efficient use of energy
Residential Product Offering

Hyper Heating Technology
M&P Series Products

- AIR HANDLER
  - SVZ 12-18
  - MVZ 12-36
  - PVA 12-42

- CEILING MOUNT
  - SLZ 9-15
  - MLZ 9-42
  - PLA 12-42
  - PCA 12-42

- FLOOR MOUNT
  - KJ 9-18

- HORIZONTAL DUCTED
  - SEZ 9-18
  - PEAD 12-42

- WALL MOUNT
  - HM 9-24
  - GL 9-24
  - D 30-36
  - EF 9-18
  - FH 6-24
  - PKA 12-36

- SINGLE-ZONE
  - COOLING ONLY
  - STANDARD HP
  - HYPER-HEATING

- MULTI-ZONE
  - STANDARD HP
  - HYPER-HEATING

- BRANCH BOX
  - 3 & 5 ZONE

- CONTROLS
  - Wireless Sensor
  - kumo station™
  - BACnet/Modbus
  - Thermostat Adapter
  - Wired and Wireless Controllers
Industry first indoor unit

As of Jan 2018, researched by Mitsubishi Electric
Training

builders  building professional  Sales teams
Indoor unit considerations

- 2nd Law of Thermo Dynamics
- System Throw
- Geospatial Orientation
- Internal Heat Source
DESIGN RECOMMENDATIONS - DUCTS IN MODIFIED TRUSSES

Plenum Truss Designs
Compact duct design

compact register design directs airflow to hug the ceiling plane

compact traditional
Integrate Ventilation System

Incoming air enters ERV, is conditioned as it passes through heat exchanger

Before being exhausted outside, stale indoor air passes through heat/moisture exchanger

Fresh air is **not mixed** with stale indoor air at heat/moisture exchanger

Humidity-balanced, conditioned fresh air may be directed to air handler or **ducted directly** to rooms

Image credit: Positive Energy, LLC
Multiple points of filtration or

1
How subtle changes can affect a home’s cooling & heating load - Orientation

<table>
<thead>
<tr>
<th>Scope</th>
<th>Net Ton</th>
<th>ft.$^2$/Ton</th>
<th>Area</th>
<th>Sen Gain</th>
<th>Lat Gain</th>
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90 DEGREE ROTATION IN ORIENTATION
Impact on HERS Score

• Typical code built house
• 2400 square feet
• Efficient appliances and lighting
• R-30 ceiling
• R-13 walls
• R-0 slab
• R-19 bonus room
## Impact on HERS Score

- **Atlanta, GA**

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<th>Heating Design Load</th>
<th>Heating Annual Loads</th>
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R-13 walls; R-30 ceiling; R-0 slab & R-19 bonus

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Projects
Sensible loads are lower, latent loads are higher.

FORTIFIED COASTAL: Corpus Christi, TX

7 PHASES

- 158 Units
- Resilient Construction
- Cat 5 rated construction
- Holistic HVAC: HP, Dehu, ERV
- Very Low Load
• Site Built Insulated Panel System
• Solar Array Being Evaluated
• Possible ZNE project
Natalie and Tom Treat wanted an eco-friendly and sustainable home — “something as net-zero as possible,” Tom said.

When they couldn’t find such a house in their price range, and when their exploration into retrofitting a house to be green came up empty, the couple decided to buy land and build an affordable, energy-efficient modular BrightBuilt home in Salisbury, Massachusetts.

For cooling and heating, the couple selected a ductless system from Mitsubishi Electric US, Inc. Cooling & Heating Division (Mitsubishi Electric). The result is what Natalie called a “modern, low-impact home that we feel very lucky to live in.”
Located in Montverde, Florida

6,600-square-foot, 3-level home

9 cooling, heating zones

3 split-ductless units, 6 ducted units

1, 2-ton single-zone outdoor unit

3, 4-ton multi-zone units
what we need to do will this work
**collaboration**

Integrated design process—all parties involved in the construction process working together to design and implement the best solution. If a party is not fully on board, the process could breakdown and fail. Complete training and buy in from the designer, HVAC installer, builder and distributor are needed in the process.

---

**the plan**

**integrated growth process**

**recruit**
Recruit new and existing HVAC installers builders and designers.

**train**
Focus on new HVAC concepts, designs, and comfort strategies.

**promote**
Training events, marketing campaigns and showcase projects.

**support**
Support new customers in transition with design, integration/installation.
Perfomance Builder

build better together
Questions