


# Ductless Mini-split Heating and Cooling: Efficiency and Applications

Wednesday, 21st of January, 2015

Efficiency First California  
Sacramento, CA

Mitsubishi Electric

# Mitsubishi Electric Cooling & Heating



**32 Years**  
Experience in the U.S. Market

The image features a light gray map of the United States, including Alaska and Hawaii, set against a light blue background. A large red Mitsubishi logo, consisting of three diamonds, is positioned over the central part of the map. Two thick red horizontal bars are placed across the map, one near the top and one near the bottom, partially overlapping the map's edges.

# Topics

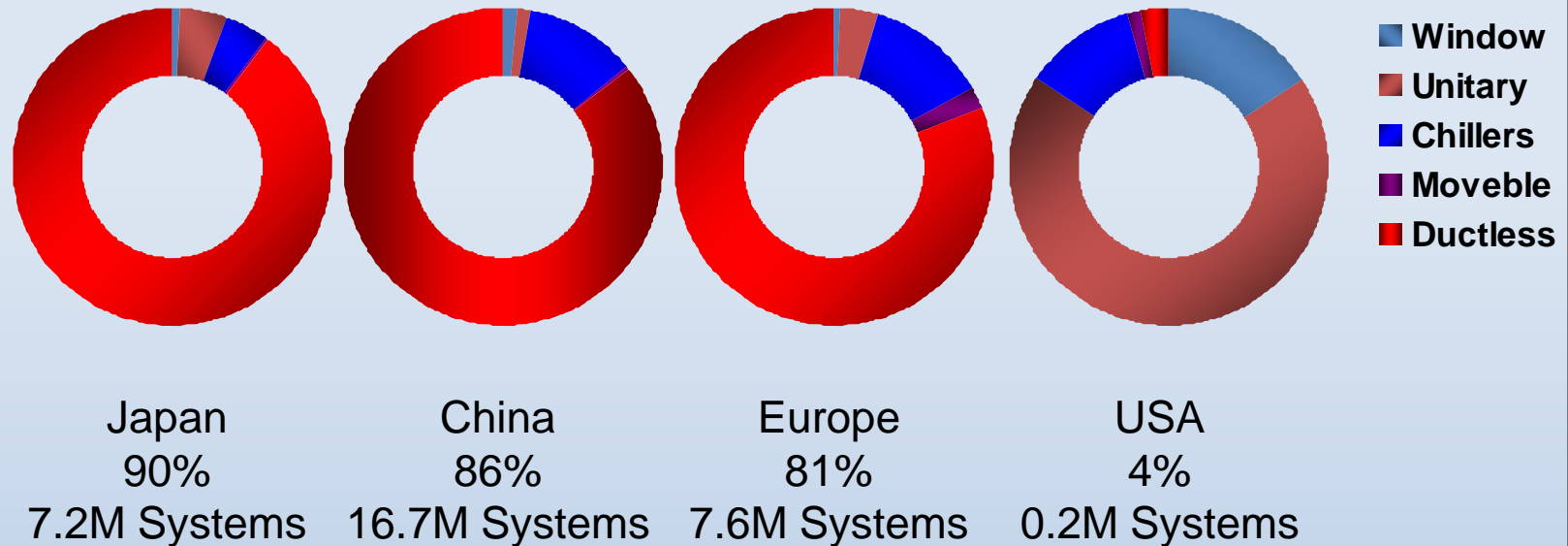
- Market performance of Ductless in US
- Advantages of Ductless Technology
- Technological advances
- Mitsubishi Warranty



# **Growth of Ductless – Decline of Unitary**

# Opportunity

*Ductless is a small percent of the U.S. HVAC market yet well-positioned to progress into a radical growth stage*



## World Ductless Penetration

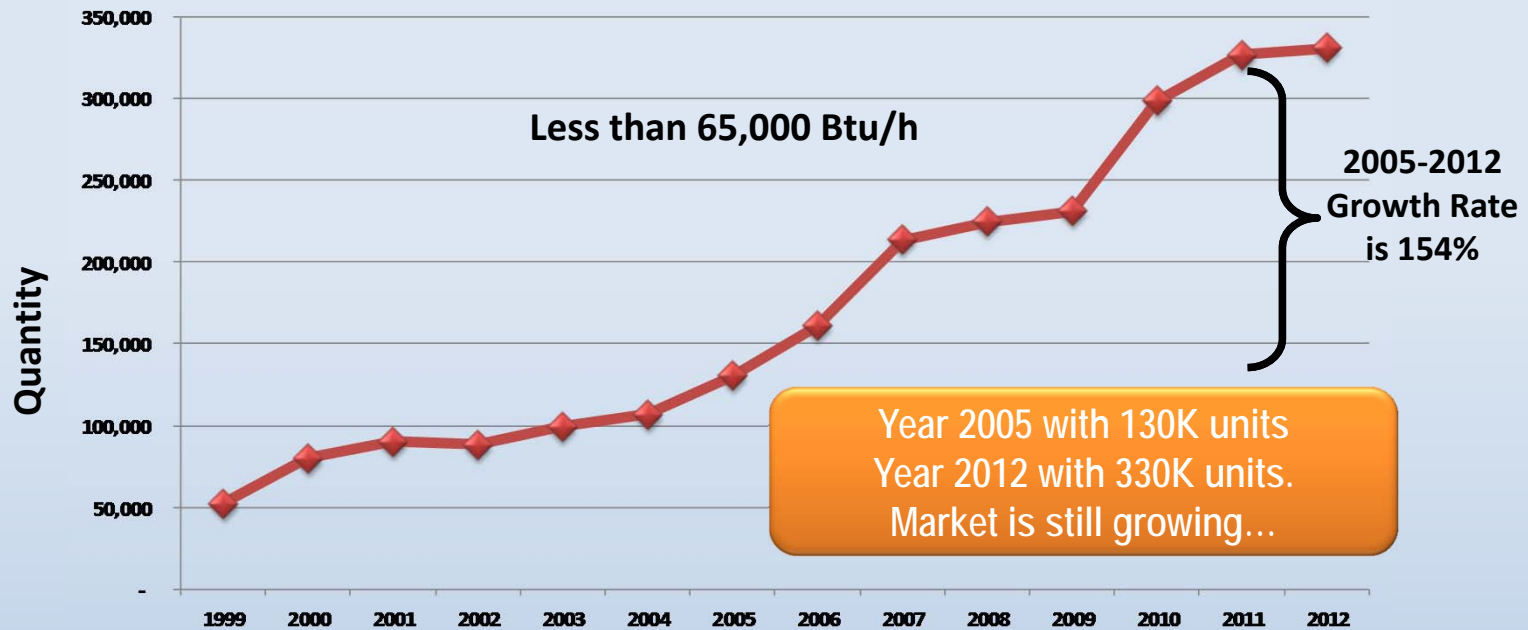
Source: BSRIA (Building Services Research and Information Association) report, 2005/2007

## HVAC Market Trend – Residential (Unitary Demand)



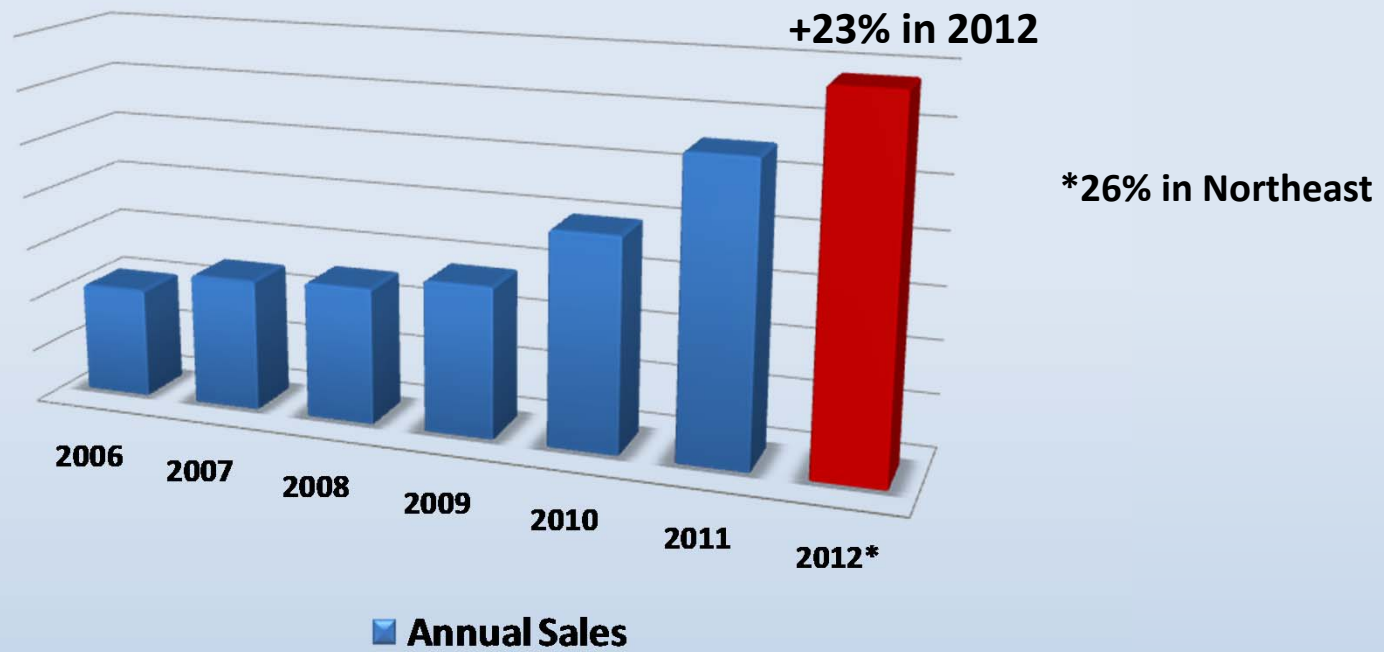
Source: Historical data from AHRI. Ductless forecast by BRG

## HVAC Market Trend – Residential (Ductless Demand)



Source: Historical data from AHRI. Ductless forecast by MEUS, using ratio ductless to unitary

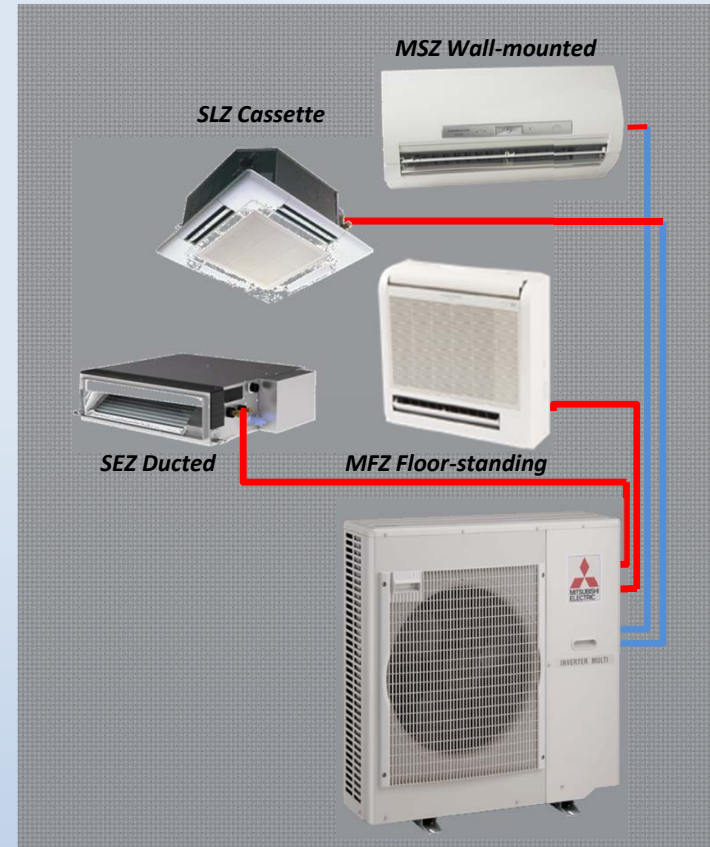
## M-Series Annual Sales





# Advantages to Ductless Technology

- No ductwork = no duct leakage
  - Energy Star: about 20 percent of the air that moves through the duct system is lost due to leaks and poorly sealed connections.
- Reliable
- Extremely quiet
- Varied style of heads
- Fast & Ease of Install and service
- Exceptional Energy Efficiency
- Individual room control - Zoning
- Can retrofit home over time, rather than all at once



# Technological Advances

# Compressor Technology

## INVERTER-driven Compressor Technology



R410A  
INVERTER

## Ductless heat pumps for multiple zones

- 2 to 8 indoor units per outdoor
- 20,000 – 48,000 BTUH
- Various indoor styles
  - Wall
  - Ceiling
  - Floor



## Advanced Controls - Internet Gateway



Remote Monitoring and access

# Cold Climate Heating: Hyper Heat

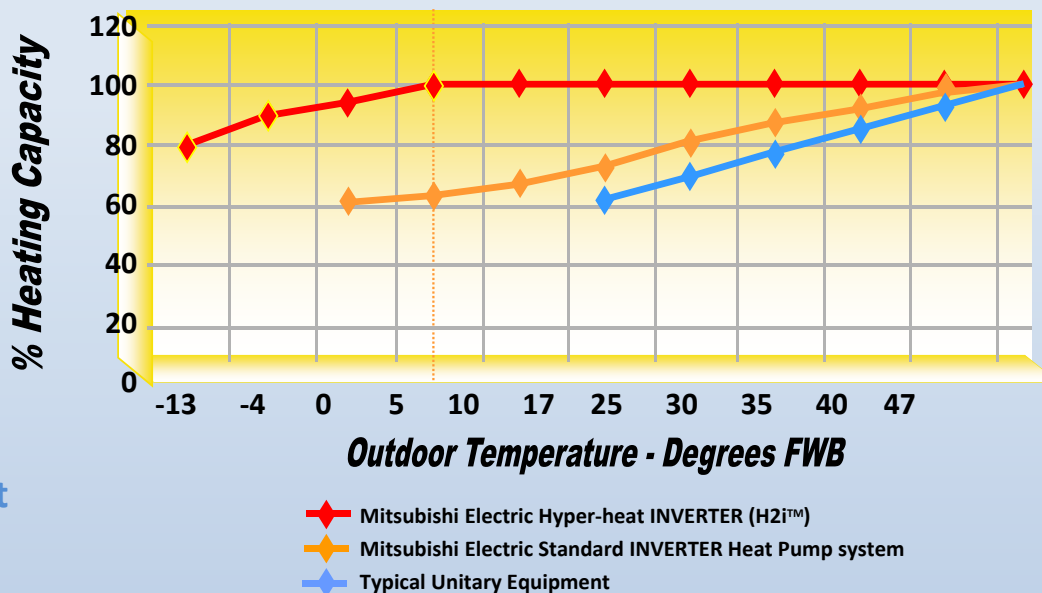


## Year-round comfort

**Hyper-heating INVERTER vs. Other Units**  
*% Heating Capacity vs. Outdoor Temperature*

↓  
**100% @ 5° F**  
**87% @ -4° F**  
**80% @ -13° F**  
↑

Amazing performance at low temps



# Mitsubishi Warranty

5 and 7

Becomes

7 and 7

Becomes

10 and 10 and 10

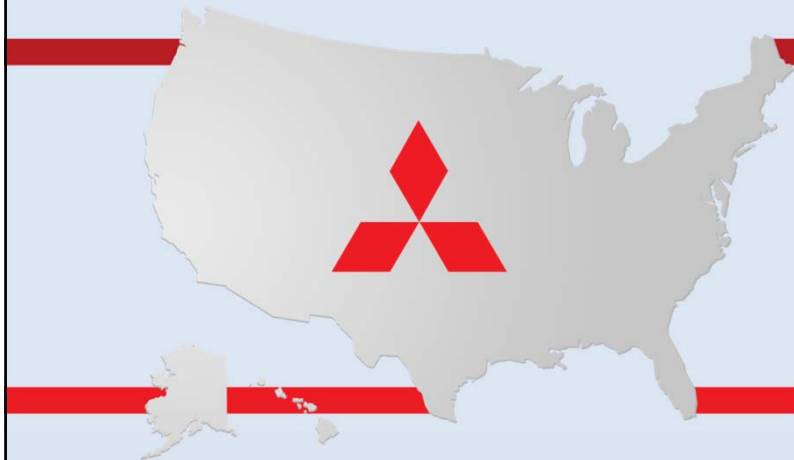
Out of the Box Mitsubishi Warranty is **5 year for parts, 7 year compressor** and we do not warranty labor of independent contractors

Mitsubishi Diamond Contractors receive an additional 2 years of parts warranty – Making it a total of **7 year parts and 7 year compressor**

With the purchase of a 10 year labor warranty offered by our partner AIG, End Users receive an additional 3 years of parts AND compressor warranty – Making it a total of **10 years parts, 10 years compressor and 10 years labor warranty**



## Mitsubishi Electric Cooling & Heating



Thank You!

**David Paschall**

**[dpaschall@hvac.me.com](mailto:dpaschall@hvac.me.com)**