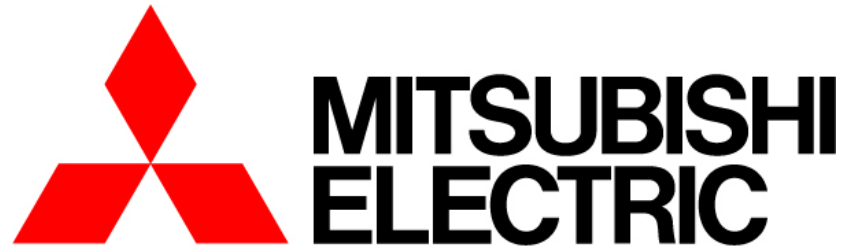




# HEAT PUMP FORUM: HOW DO HEAT PUMPS COMPARE TO THE OLD WAY OF HEATING & COOLING?



HEATING & AIR CONDITIONING

**Matthew Tilas**

**Area Sales Manager NH**

**6/23/2022**



Outdoor units



Indoor Units



Heat pumps come in all shapes and sizes to meet your needs and aesthetics.

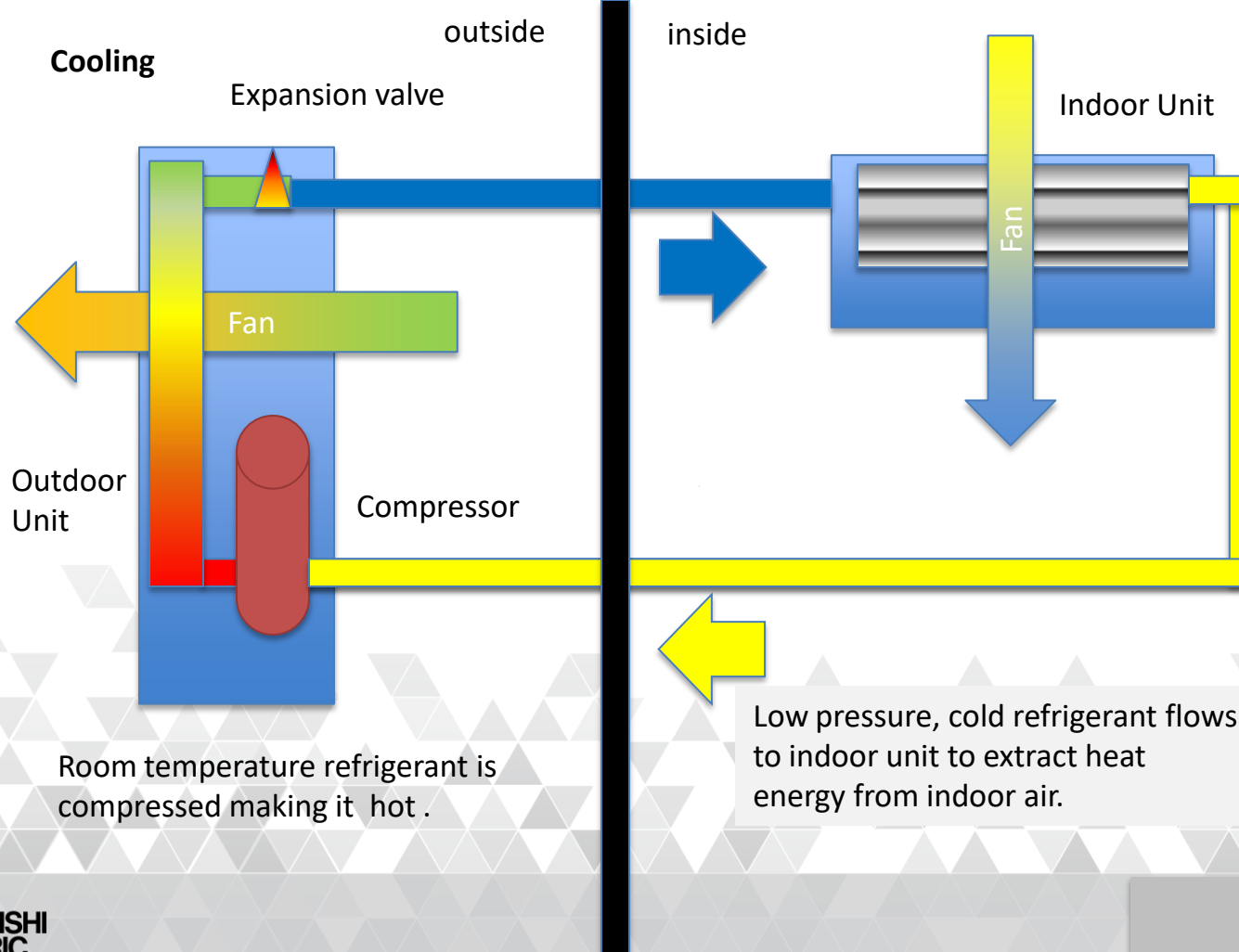






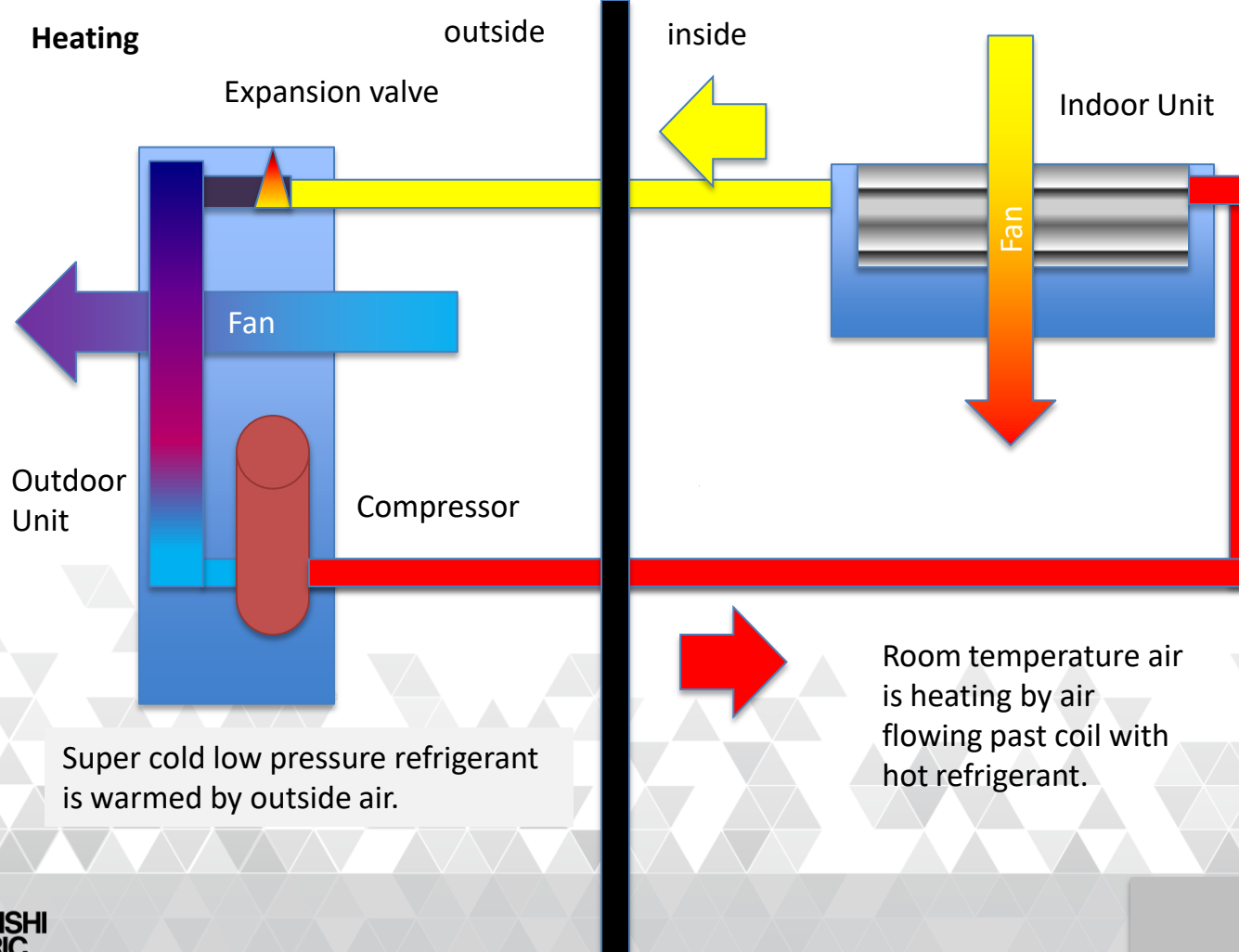






Room temperature refrigerant is compressed making it hot .

Low pressure, cold refrigerant flows to indoor unit to extract heat energy from indoor air.



Heating

outside

inside

Expansion valve

Indoor Unit

Fan

Fan

Compressor

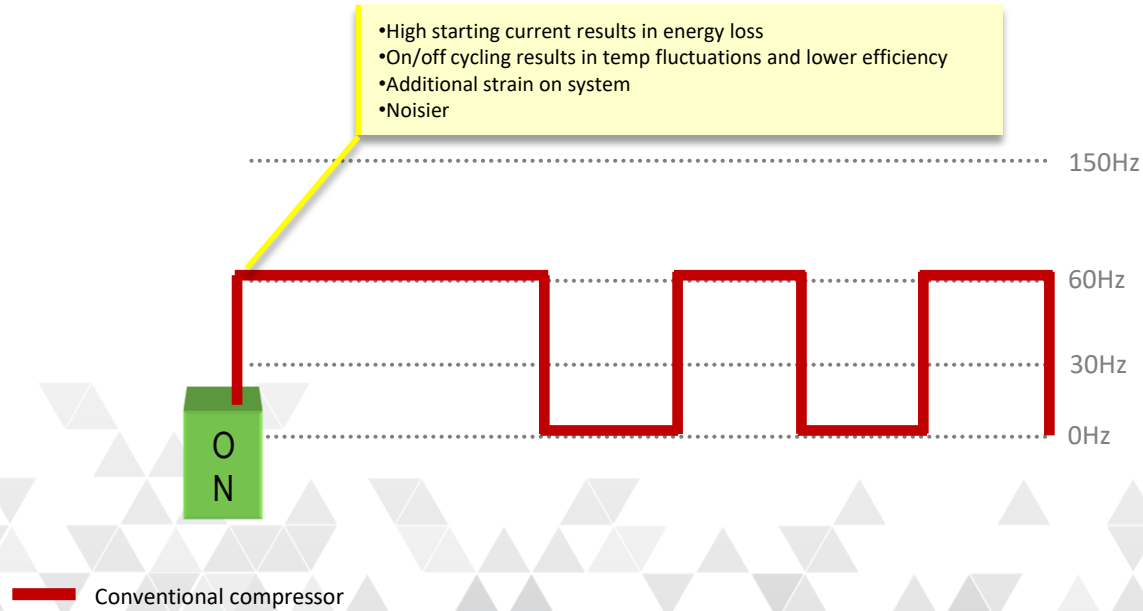
Outdoor Unit

Super cold low pressure refrigerant is warmed by outside air.

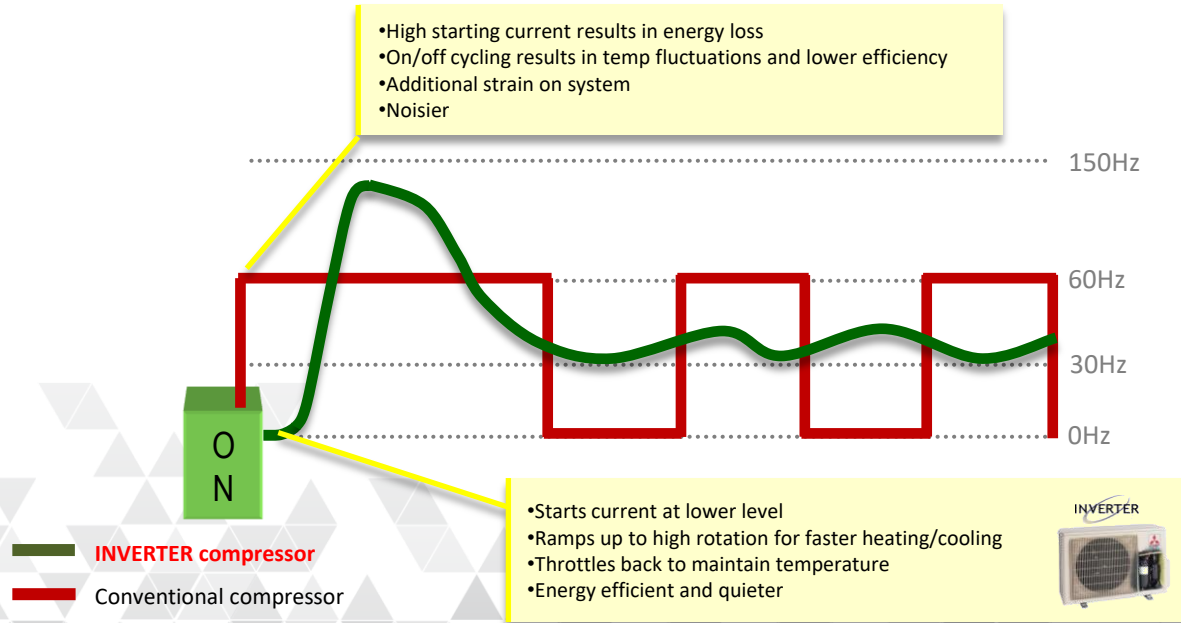
Room temperature air is heating by air flowing past coil with hot refrigerant.



# Conventional Compressor



# INVERTER Technology

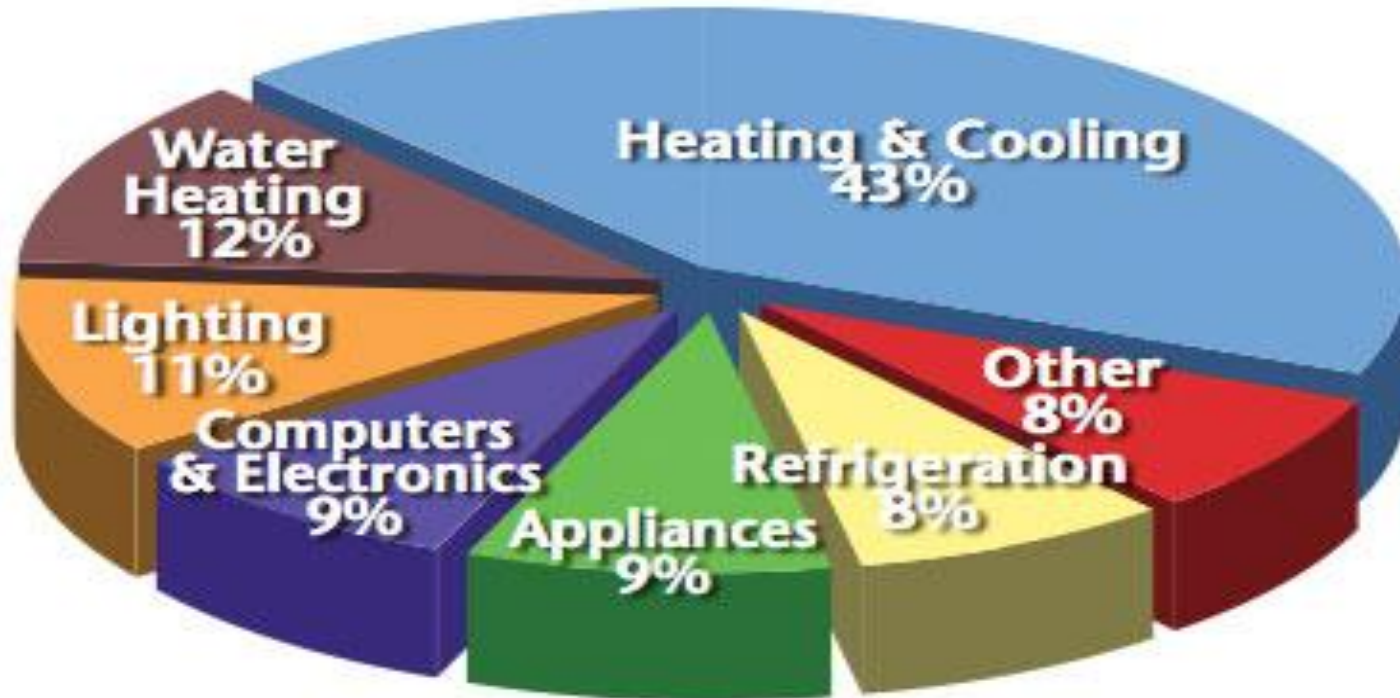


# More Features & Benefits

- **Quiet Operation**
- **Energy Efficiency**
- **Environmentally-Friendly**
- **Hyper Heat Technology**
- **Multi-Zone capabilities**



# Energy use in American Homes





Equipment Type	Average COP
Boilers	0.96
Direct Heat	0.82
Furnace	0.98
Resistance Heat	1.00
Standard Heat Pump	1.86
MiniSplit HP (zone IV)	3.71

Sourced from [AHRI Certification Directory](#)

# COMPARISON – Cost per MBTU/HR

- Oil @ \$4.00/gal
- Electric @ .22c/kWh

## Oil Boiler:

Rated at 45F: \$41.86

Rated at 15F: \$41.86

Rated at 5F: \$41.86

Rated at -13F: \$41.86



# COMPARISON – Cost per MBTU/HR

- Oil @ \$4.05/gal
- Electric @ .22c/kWh

## MUZ-FS09

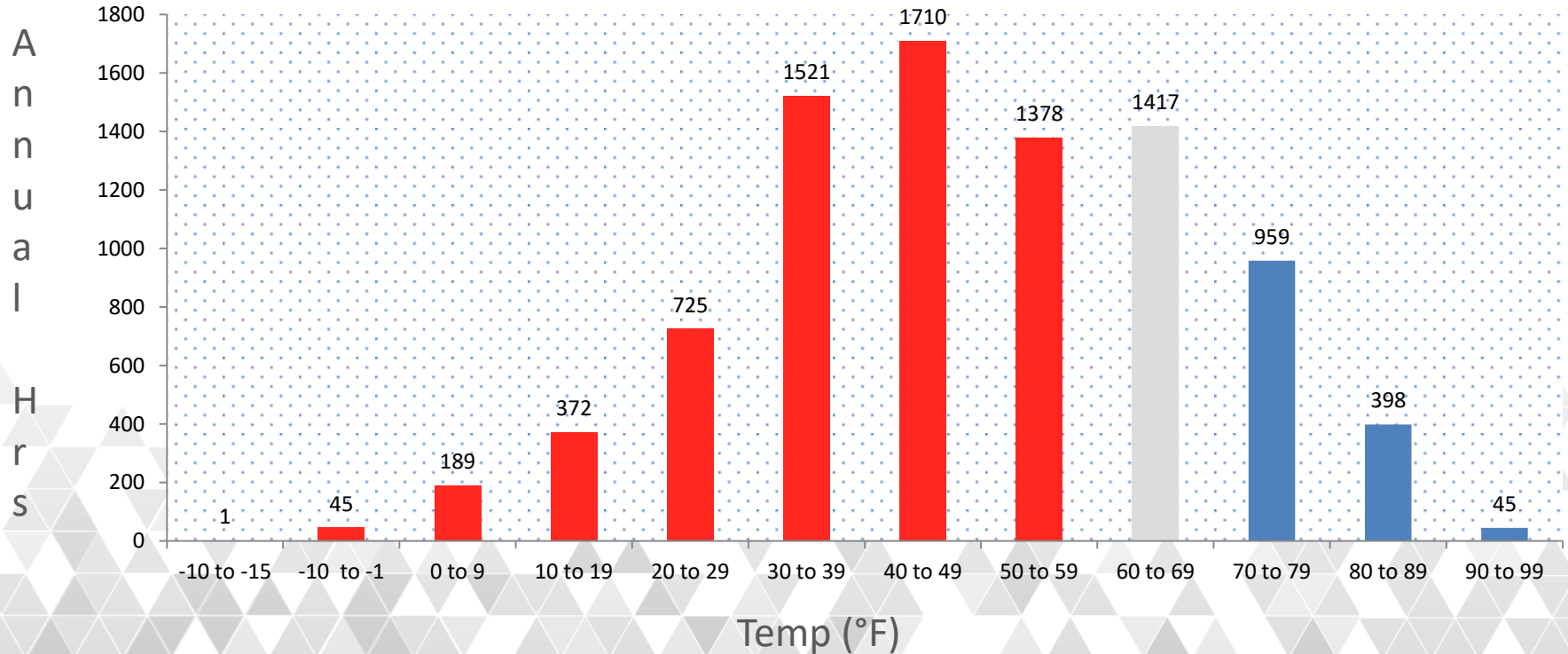
COP at rated capacity at 45F: COP of 3.33 = \$19.38

COP at rated capacity at 15F: COP of 2.63 = \$24.53

COP at max capacity at 5F: COP of 2.41 = \$26.76

COP at max capacity at -13F: COP of 1.89 = \$34.10

# Manchester, NH Annual Temperatures



Source: Engineering Weather Data, Michael Kjelgaard,



More than 50,000 cold-climate heat pumps installed on Maine and NH homes since 2010.

Thousands installed north of Bangor, ME with very few issues or complaints. Ongoing reliability and efficiency below 0 F.

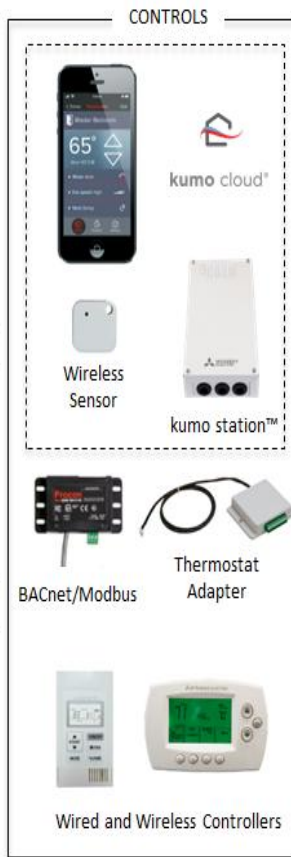
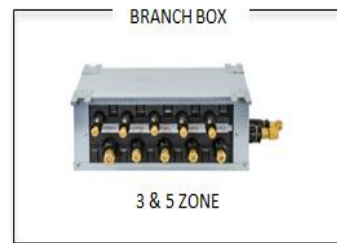
Sales continue to climb and are driven by word of mouth between neighbors and family.

## HOLLIS PRIMARY SCHOOL



*"When you set the units to a certain temperature, the room just stays at that temperature. The learning environment has improved dramatically because it is so much more comfortable."*

# MORE THAN WALL MOUNT



# SPACE REQUIREMENTS





# MULTI-POSITION AIR HANDLER

static

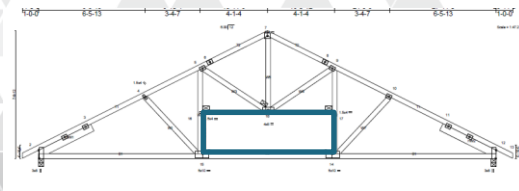
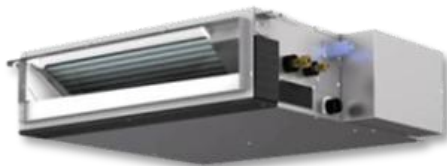
0.3-0.8 I.W.C.

capacities

12,000-42,000 Btu/h



# DUCTED FLEXIBILITY



# Single Zone



GL



SLZ



KJ

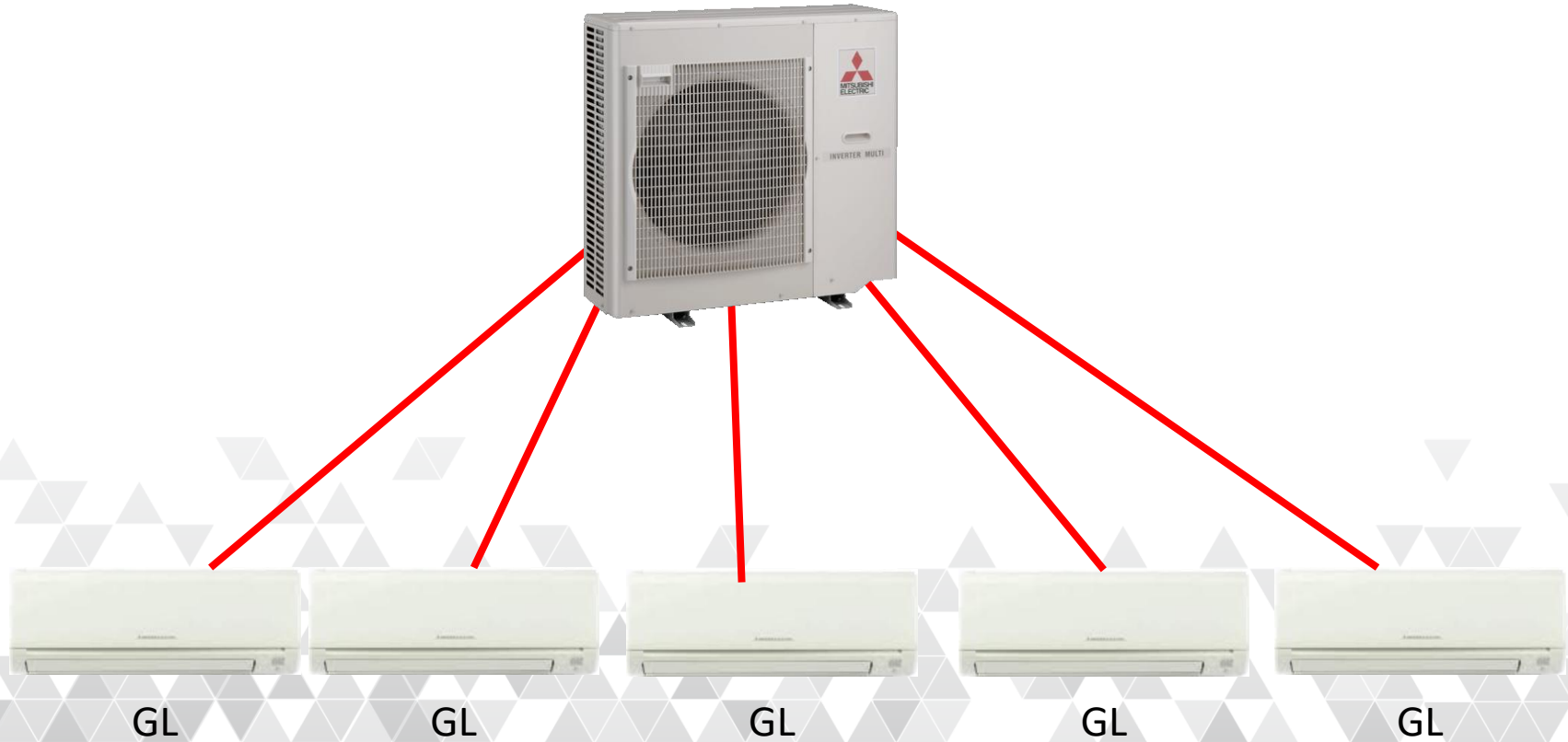


FH



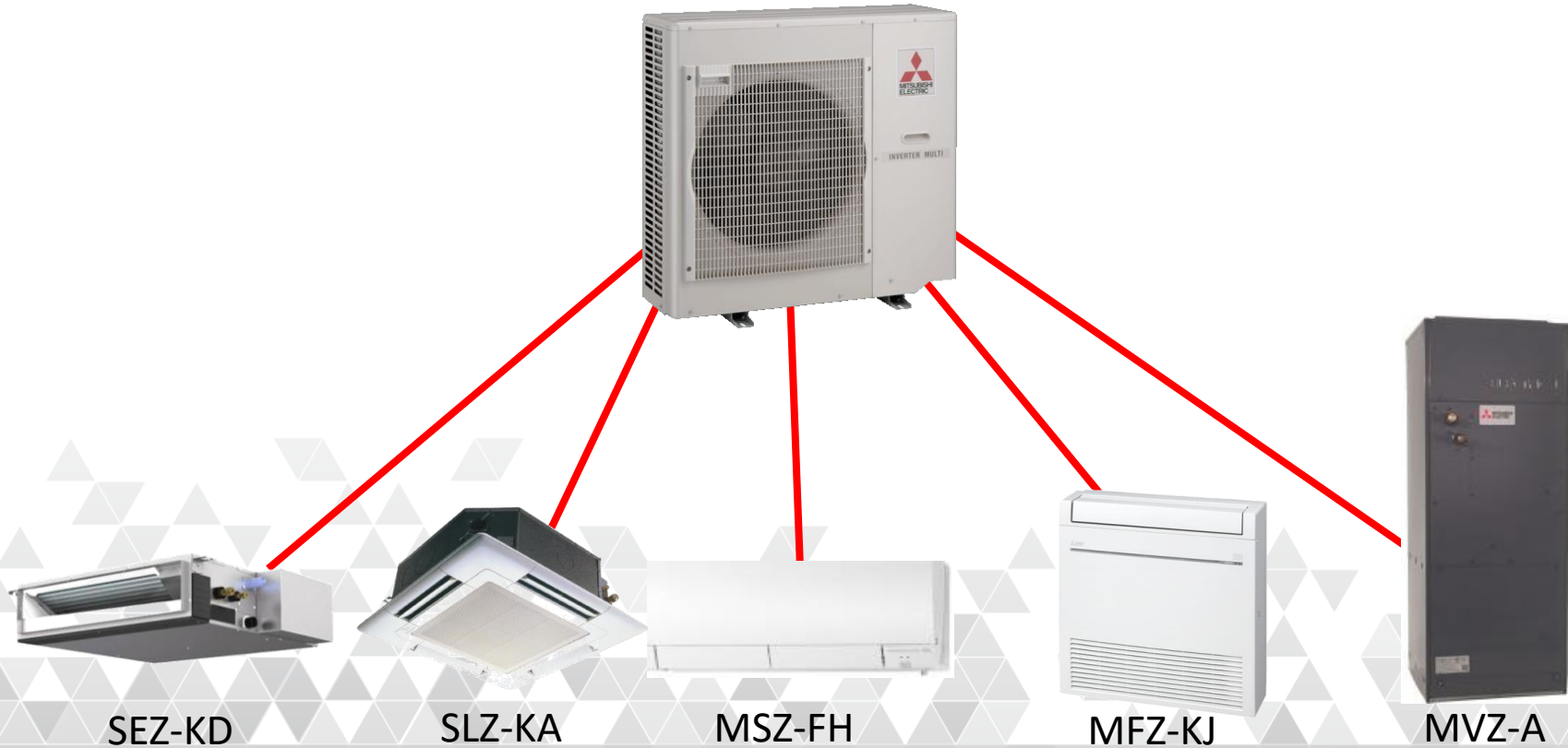
SEZ

# Multi Zone





# Multi Zone





### Wireless/Wifi

**kumo cloud**

### Wireless Interface:

**PAC-USWS002-WF-1**



### Thermostat Interface

**PAC-US444CN-1**



### Hand-held



### Wall-mounted/Wifi

**MHK1**



### Wall-mounted

**PAR-33MAA**



### Wall-mounted

**PAC-YT53CRAU**

# Questions?



All Ductless