



## HEDRICK ASSOCIATES OF GRAND RAPIDS

West Michigan's Factory Representative



### Variable Refrigerant Flow (VRF) Systems

#### Why Is VRF The Right Choice For Your Comfort Cooling Needs?

#### Why Has The Rest Of The World Already Adopted VRF As Their Technology Of Choice?

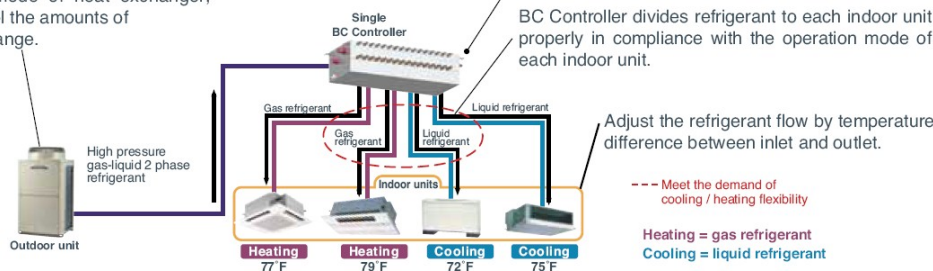
If you are not considering VRF HVAC technology for your comfort cooling equipment, you may be leaving **considerable operational energy savings on the table**. On top of this, VRF offers individual zone control that is unmatched by today's legacy comfort cooling products, designs, and applications. At this technical seminar, attendees will learn how VRF systems differ from typical building HVAC systems, and what benefits these differences bring to not only the occupants, but to the building owner, design engineering team, architects, and installers. Attendees will also be invited to view Mitsubishi VRF products in a demonstration trailer. Here attendees will see the pieces and parts that produce the cooling and heating delivery, as well as the advanced controlling technologies and features that comprise the VRF system and set Mitsubishi apart from other VRF offerings.

#### VRF Technology Overview:

- Instead of an individual, large, A/C unit pumping out air to an entire multi-room space, a VRF HVAC system features several smaller air handlers, each dedicated to individual "zones" within the greater space.
- Each of these units can be individually controlled by the occupant of the zone, optimizing individual comfort **in every space**.
- Many individual indoor units can be piped back to a single outdoor unit, which limits the components that must be placed around, on, or inside the building.
- The term variable refrigerant flow, or VRF, refers to the system's ability to control the amount of refrigerant flowing to each of these small air handlers.
- The VRF system operates in similar fashion to a heat pump system, as they offer the ability to provide heating or cooling depending on need or season.
- The unique benefit of VRF as compared to traditional heat pumps is that each zone can operate in a different mode if the space needs demand it. Different indoor units attached to the same outdoor unit **can be operating in either heating or cooling simultaneously**.
- The considerable operational savings come about when the various zones are operating in different modes. In these situations, the VRF system is able to transfer heat amongst the indoor units through a branch controller. When this takes place, it greatly reduces the demand on the outdoor unit. **Instead of rejecting the heat, the system transfers the heat.**
- The end result is unmatched energy efficiency paired with unmatched zone control. And that means a happy owner and a much greater likelihood of satisfied occupants.

#### Two-pipe simultaneous operation

High pressure and low pressure decides the compressor frequency and the mode of heat exchanger, and control the amounts of heat exchange.



#### ~ Seminar 1 ~

August 15, 2016

Alpena, MI

Alpena Golf Club

1135 Golf Course Road

Seminar Registration @ 10:30am

Lunch Served at 12:00pm

Seminar Concludes @ 2:30pm

#### ~ Seminar 2 ~

August 16, 2016

Traverse City, MI

Hagerty Center

715 East Front Street

Seminar Registration @ 10:30am

Lunch Served at 12:00pm

Seminar Concludes @ 2:30pm

#### ~ Seminar 3 ~

August 17, 2016

Grand Rapids, MI

Watermark Country Club

5500 Cascade Road SE

Seminar Registration @ 10:30am

Lunch Served at 12:00pm

Seminar Concludes @ 2:30pm

#### ~ Seminar 4 ~

August 18, 2016

Kalamazoo, MI

John E. Fetzer Center

2350 Business Court

Seminar Registration @ 10:30am

Lunch Served at 12:00pm

Seminar Concludes @ 2:30pm

#### ~ Seminar 5 ~

August 19, 2016

Bath, MI (Lansing Area)

Eagle Eye Golf Club

15500 Chandler Road

Seminar Registration @ 10:30am

Lunch Served at 12:00pm

Seminar Concludes @ 2:30pm

**CEUs  
Provided!**



Hedrick Associates

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### MORNING SESSION: VARIABLE REFRIGERANT FLOW THEORY AND APPLICATION

**The morning technical session** will cover the theory of operation of VRF systems, as well as the various configurations they can be applied in. The presentation will also illustrate the multiple indoor and outdoor unit form factor options that lend the Mitsubishi VRF solution to more effectively integrating into challenging renovations, unique architectures, and achieving higher LEED certifications.

### LUNCH AND PRODUCT DEMONSTRATION PERFORMANCE

**At the conclusion of the morning session** we will break for a half-hour lunch, provided for free to all attendees. Then the group will tour Mitsubishi's product demonstration trailer. The demonstration truck is built out with various Mitsubishi VRF products and controls. The demo will show the City Multi product's capabilities to achieve low noise levels, rapidly cool and heat on call, and control and monitor space conditions and performance metrics.

### AFTERNOON SESSION: THE CASE FOR MITSUBISHI AND VRF

**The afternoon session** will feature case study support of VRF. The presentation will show the difference in total cost of ownership for VRF over other technologies in real world case studies. The superior zone control capability will also be supported with field case studies. Further, the presentation will review unique feature of the Mitsubishi VRF product that allows it to provide an unique set of benefits over competitive products.

## Mitsubishi Demo Trailer





# HEDRICK ASSOCIATES OF GRAND RAPIDS

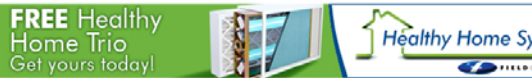
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## VRF IN THE INDUSTRY NEWS

### the NEWS

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Home - VRF's Emerging Role in the Ductless Marketplace

HVAC Residential Market HVAC Light Commercial Market HVAC Commercial Market Split Systems

#### VRF's Emerging Role in the Ductless Marketplace

A focus on individualized comfort and energy efficiency spurs VRF growth in North America

### the NEWS

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Connect with engaged customers.

Home - VRF Systems Demonstrate Sustainability, Energy Efficiency

HVAC Light Commercial Market HVAC Commercial Market Split Systems

#### VRF Systems Demonstrate Sustainability, Energy Efficiency

Three working examples demonstrate versatility of VRF technology

### With VRF, University Achieves LEED® Gold... Again

Colleges and universities are recognized as thought leaders at the forefront of important societal and scientific trends. So it is no surprise that in the U.S., centers of higher education are often models for a broadly important subject: environmental stewardship.

Recent reports from the U.S. Green Building Council (USGBC) state that of all LEED-certified buildings, nearly 14 percent are on college campuses and that 3,430 higher education projects were registered or certified under the LEED family of rating systems.

Pacific University: A Leader in Sustainable Practices

### VRF Offers Hilton Garden Inn Quiet Operation, LEED Certification

May 24, 2016 | 42 views | 13 Likes | 0 Comments | LinkedIn Facebook Twitter

VRF Offers Hilton Garden Inn Quiet Operation, LEED Certification

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More comfort. More efficiency. More support.

HOME > ARCHIVE > VARIABLE-REFRIGERANT-FLOW ZONING SYSTEM EARNS ENERGY & ATMOSPHERE LEED CREDITS

#### Variable-Refrigerant-Flow Zoning System Earns Energy & Atmosphere LEED Credits

Aids in facility's pursuit of LEED Platinum certification

By MITSUBISHI ELECTRIC COOLING AND HEATING SOLUTIONS | HPAC Engineering Sep 1, 2011



### LEED® Silver Student Housing Benefits from VRF Zoning Capabilities, Controls Network

The state of California is home to some of the most demanding energy standards in the nation. The standards dictate improved energy efficiency, enable demand reductions during peak periods and allow for future technologies to enter the market. The Suites on Paseo (Suites), San Diego, is a new student housing complex that followed these standards, resulting in LEED® Silver certification and 287 very comfortable students. Variable Refrigerant Flow (VRF) zoning technology from Mitsubishi Electric US, Inc. Cooling & Heating Division (Mitsubishi Electric) played a large role in meeting the state's standards.

HVAC Residential Market HVAC Light Commercial Market Split Systems

#### VRF Gaining Acceptance in U.S. Marketplace

Value in VRF Found in the Equipment's Benefits, Life Cycle Cost



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#### From Old to New: VRF Improving the College Campus



A proven HVAC technology worldwide, Variable

Refrigerant Flow (VRF) zoning is known for providing superior occupant comfort.

By: Kevin Miskewicz

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Home - VRF: Now More Than Ever

Cooling & Chillers HVAC Retrofits Commercial HVAC

#### VRF: Now More Than Ever

February 1, 2016

James J. Siegel

It's not a new technology, but it's more popular than ever. While VRF is providing engineers and building owners with a financial payback, the benefits go beyond energy efficiency.



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**THIS SEMINAR IS FREE FOR ATTENDEES AND LUNCH IS PROVIDED**

#### SCHEDULE

<b>10:30AM:</b>	<b>REGISTRATION</b>
<b>11:00AM - 12:00PM:</b>	<b>MORNING TECH SESSION</b>
<b>12:00PM - 12:30PM:</b>	<b>LUNCH</b>
<b>12:30PM - 1:15PM:</b>	<b>DEMO TRAILER WALK THRU</b>
<b>1:15PM - 2:30PM:</b>	<b>AFTERNOON TECH SESSION</b>
<b>2:30PM:</b>	<b>WRAP UP / RAFFLE</b>

### ON-LINE REGISTRATION

**PLEASE CLICK THE REGISTER BUTTON BELOW TO REGISTER FOR THIS EVENT**



**PLEASE REGISTER BY AUGUST 9TH!!!**



**COOLING & HEATING**



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