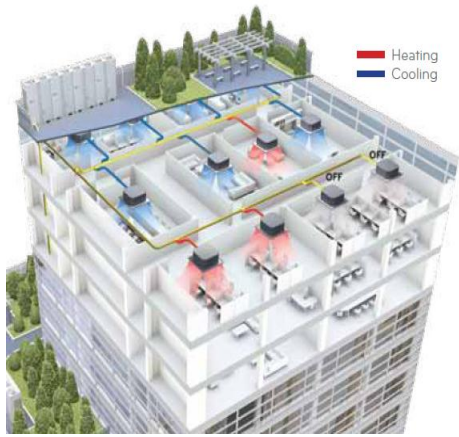
What is VRF ?

Variable Refrigerant Flow (VRF) is a technology introduced to minimize efficiency losses found in conventional HVAC systems thus providing sustainable energy benefits. A VRF system utilizes the flow of refrigerant to provide heating and cooling throughout a building. With the addition of a heat recovery box a single system can provide simultaneous heating and cooling for optimal occupant comfort.



Zoned Comfort Control & Dehumidification

With the use of inverters and dual compressor outdoor units, the LG Multi V system offers superior load matching, preventing constant cycling or large temperature swings.

Sustainability

The architectural and engineering community is adopting a balanced design approach. This approach considers energy and water consumption, repetitive maintenance costs, the impact of development on the environment, and the building's initial cost as equally important factors in developing high performance, sustainable buildings that will increase building value. LG's Multi V VRF systems will help achieve points for sustainability programs.

Stylish Design

LG Multi V offers the widest range of indoor units to fit any décor and offers unparalleled aesthetic design.

Mirror Wall Unit

Art Gallery Cool

Quiet

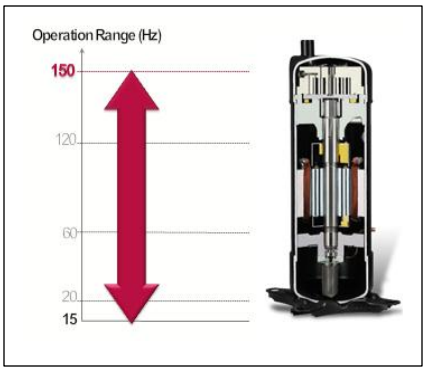
Work without distraction. Sleep without noise. With indoor units that can operate at sound levels as low as 23dB(A) and outdoor units that operate as low as 50dB(A) and lower with night quiet operation, Multi V creates a comfortable environment so quiet it's almost undetectable.

Multi V – IV…..4th generation

Innovation that Outperforms the Rest

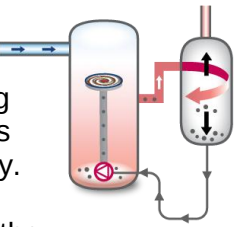
LG raises the bar with its most advanced commercial HVAC solution, Multi V IV. The fourth generation now has all Inverter Compressors (no constant speed allowed!!). Additional features, higher energy efficiency and longer piping capabilities.

Heating Capacities as standard operate and published to **(– 13 F) ambient.**

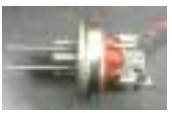


Series IV incorporates inverter compressors throughout that operate as standard between speeds of **15 Hz and 150 Hz**. No constant speed compressors are used.

Refrigerant vapor from sub-cooler is injected into scroll chamber at a mid pressure suction gas which improves heating performance during low ambient temperatures.



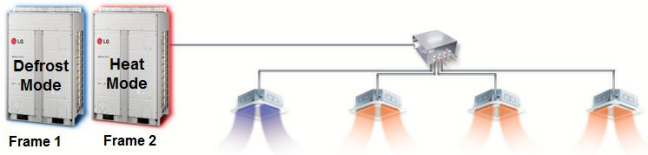
HiPor (High Pressure Oil Return) - the oil is returned to compressor thru separate inlet pipe. As a result mixing of the oil and refrigerant is reduced increasing efficiencies since the compressor is used to compress refrigerant only.



Oil level sensor added to the compressor to provide direct oil level sensing Oil recovery cycle **only initiated** when oil level is too low. R&D test resulted in 200 days with no oil recovery cycle – NOT Required Full Heating Season!

AHRI 1230 Certified Performance – 2014 Data shows LG as the highest in the industry over 93 % of the time versus all other VRF manufacturers in the industry.

Defrost Strategies:



LG's Heat Recovery and Heat Pump units all have the same defrost strategies during winter time operation. Frost formation in any heat pump design is a related to the wet bulb temperature or available moisture in the ambient air. Typically this occurs in the upper 20s and low 30s dry bulb temperatures (freezing rain a perfect example). On a design day, 0 F dry bulb there is less available moisture available to form frost which would reduce the frequency of the defrost cycle.

Single Frame Modules (6-12 ton systems) employ a split coil defrost system. This allows half of the outdoor coil to go in a defrost cycle while the other portion of the outdoor unit coil can continue to operate in a heating mode. This provides continuous heat output to the interior spaces.

Dual and Tripe Frame Modules (12-30 ton systems) utilize a split frame defrost strategy. Heating mode IDU fans to stay on first two cycles of defrost. If defrost continues to be an issue such as during a freezing rain occurrence, LG uses a unique program logic which initiates a full defrost every third cycle to insure all ice is cleared, the duration of this cycle is 5-10 minutes.

LG's Dedicated Outdoor Air Solution

100 % OA –Make Up Air Solutions

1200-2000 CFM – Range

- Direct connect to the VRF Loop
- Double wall insulation (Low sound)
- Low profile (Saves ceiling space)
- Backward Inclined Plenum Fan – **Up to 1.65" ESP**
- Variable speed fans with ECM motor (ECM adjustable static pressures)
- **Merv 8 filter** standard (Clean indoor air)
- SCR controlled electric preheat coil (Saves energy)
- Access doors with removable pins (Easier service)
- Ties right into the existing communication com (seamless)
- Web accessible controls (Remote access)
- LonWorks or Bacnet ready (Saves install cost)

Water Cooled Condensing Unit

460v & 230v – 3 phase available
6-48 nominal tonnage range
Geothermal & Tower – EFT to 30 F

Multi V Mini – Water Cooled

3, 4, or 4.4 tons with up to 9 indoor units
Buildings with existing cooling tower
Geothermal systems
208-230v - **Single Phase**
Size: 20.5” W x 13” D x 42.5” H

Hydro Kits

Domestic hot water, capabilities. Indoor cooling & heating water options available.

Utilize for outdoor air treatment with hydronic solutions using Multi V VRF

Hot Water Out: 176 F (max)
Capacity: 86 MBH

Hot Water Out: 122 F (max)
Cold Water Out: 43 F (min)
Cooling Capacity: 96 MBH
Heating Capacity: 108 MBH

Multi V Space II - 4.4 Ton unit

LG Multi V Space systems are especially well suited for multi-tenant high-rise applications or apartment complexes. They are designed to mount inside a building yet exhaust heat to the outside.

Benefits of the units are:

- No outside space required (Each tenant can have their own system)
- Piping all inside (No intrusion into other tenant spaces)
- VRF efficiency (Use only what you need)
- Single phase power (Tenant metering)
- Installs indoors, exhaust outdoors (Easy front access)

The LG ADVANTAGE

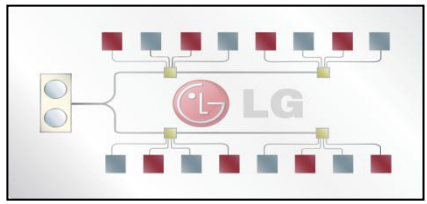
Maximize the Total Cost of Ownership

- Competitive VRF Technology
- Lowest Installation Costs
- Performance Efficiencies
- Piping Efficiencies
- Individual Zone Control
- Heat Recovery Boxes

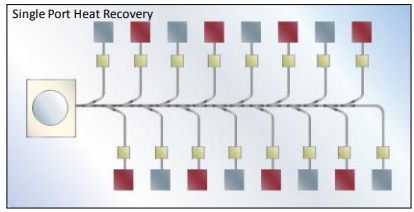
LGs – 4 port Heat Recovery Unit (HRU) - allows 4 zones to be heated or cooled simultaneously – piped in series or parallel

LGs Heat Recovery Units (HRUs) – maximize piping reach while minimizing material and labor costs. Piping, fittings, branches, headers, hangers, insulation, joints, nitrogen, and labor hours can be greatly reduced resulting in significantly lower installed cost.

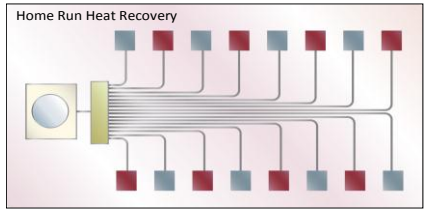
LG - Full independent heating & cooling. Series and/or parallel configuration, Short piping (fewer joints & Y fittings). No heat recovery unit condensate drains needed.



Competitor D - Configured for full independent heating and cooling, parallel design only, with many HRUs and **many joints required**.



Competitor M – Configured for full independent heating and cooling, series only, **lengthy** homerun piping, and may require HRU condensate drain.



Reduce labor hours **significantly by decreasing the number of** ***boxes*** **and** ***Y fittings*****!**