



New concept | Eco-friendly | High-efficiency | Heating solution

# Hydro Kit

TOTAL HEATING & HOT WATER SOLUTION FOR MULTI V

LG Hydro Kit is total HVAC solution that is applied to water Heating, Domestic hot water supply as well as Air-Conditioning by connecting various heat pump outdoor unit.

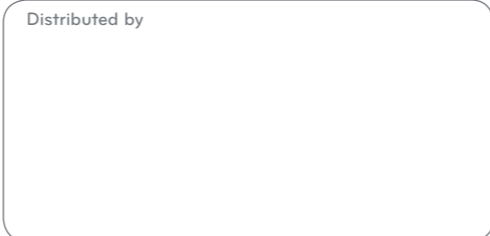
**LG Electronics**  
**AE Company, Commercial Air Conditioning**

20 Yeouido-dong, Yeongdeungpo-gu, Yeouido P.O.Box 335 Seoul, 150-721, Korea.  
Phone : +82-2-3777-7586

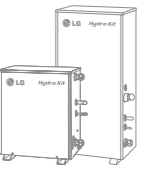
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# Hydro Kit



## ECO-FRIENDLY, HIGH-EFFICIENCY, ENERGY SAVING, RECOVERY BASED HEATING SYSTEM

Control more than just the temperature with our Eco-Friendly Heat Pump.

### THE HYDRO KIT

LG new Hydro Kit is a high-efficiency total solution for floor heating and cooling and hot water supply. This energy saving heating system takes advantage of ambient air temperatures and residual heat from other areas of the building through air-to-water heat exchange to produce domestic hot water for various applications. Ideal for providing hot water supply to commercial buildings in an energy-efficient way, the Hydro Kit has minimized energy costs as compared to a boiler, while achieving a considerable reduction of CO<sub>2</sub> emissions.



Hot Water Heating



Domestic Hot Water Supply



In-Floor Heating with Hot Water



In-Floor Cooling with Cold Water



Cold Water Cooling

LG presents a solution that will satisfy your building's water heating needs, raising temperatures without adding to the bottom line.

### ECO-FRIENDLY WITH LOWER CO<sub>2</sub> EMISSIONS

Compared to fossil-fuel boiler systems, the Hydro Kit emits far less CO<sub>2</sub>. Providing sustainable operation for space heating and domestic hot water using ambient air, a renewable energy source, the Hydro Kit has achieved a considerable reduction of CO<sub>2</sub> emissions— using as little as 30% of that of a gas boiler. Thanks to the refrigerant used, (R-410A) that has a Zero Ozone Depleting Potential (ODP), LG contributes to ozone protection.

### ENERGY SAVINGS THANKS TO A HIGH-EFFICIENCY COMPRESSOR

Because our systems extract thermal energy from the ambient air or residual heat from cooling operations, they are far more energy efficient than comparable boiler systems. The Hydro Kit advanced heat pump technology and high-efficiency compressor can optimize operations according to heating loads to increase reliability, reduce noise levels and save energy while achieving flow temperatures up to 80°C. The heat pump works much more efficiently and conserves more energy than a traditional heating system based on fossil fuels or electricity to reduce running costs and carbon emissions. It also avoids the inconvenience of installing gas boilers and meters as well as their related maintenance costs, all while attaining a significantly higher Coefficient of Performance (COP) when compared to boiler.

[A heat pump's efficiency is measured in COP (Coefficient of Performance) for heating and EER (Energy efficiency ratio) for cooling.]

LG MULTI V Hydro Kit achieves COP of up to 4.2(with MULTI V WATER II), meaning one unit of consumed energy yields 4 units of heated or cooled energy.

### RECOVERY HEATING SYSTEM - HOW TO GRAB HOT WATER FROM THE AIR

The heat pump contained in the Hydro Kit works by extracting heat from ambient air and upgrading it to heat a building or provide domestic hot water which means that heat can be recovered and reused. This ensures less energy wastage. The heat recovery aspect of the Hydro Kit goes beyond to make use of wasted heat, extracted from other areas of the building requiring cooling. This allows the heat gathered from within a building's infrastructure to be collected and stored, ready for use as hot water or heating. Taking full advantage of this, the Hydro Kit recovers and reuses the heat, which ensures less energy wastage resulting in greater energy efficiency, reduced running costs and a reduction in carbon emissions.

Tapping into renewable energy sources, that's LG smart!

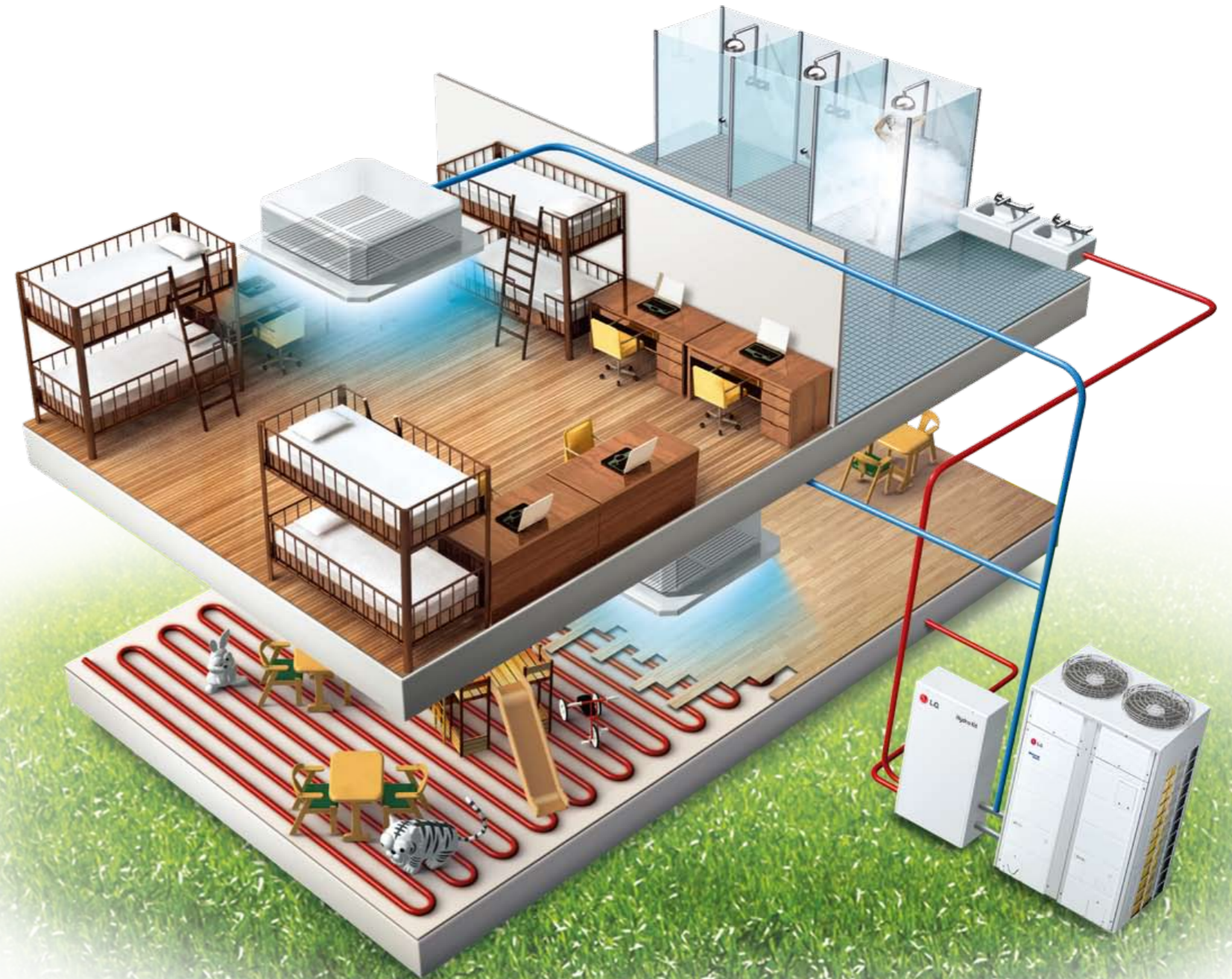
### Hydro Kit FOR MULTI V - A COMPLETE HVAC SOLUTION

Combining efficiency and total comfort, the addition of an LG Hydro Kit to an LG Multi V system provides a total heating and cooling solution for a range of applications. Providing hot water supply to these applications is adding a booster unit to the existing air conditioning systems. The easy to install compact modular structure becomes an all-in-one global solution for heating, cooling, ventilation and sanitary hot water.

By linking the LG Hydro Kit and LG Multi V, excess heat can be successfully re-used for the generation and storage of domestic hot water as well as for heating, via underfloor circuits, fan coil units and radiators.

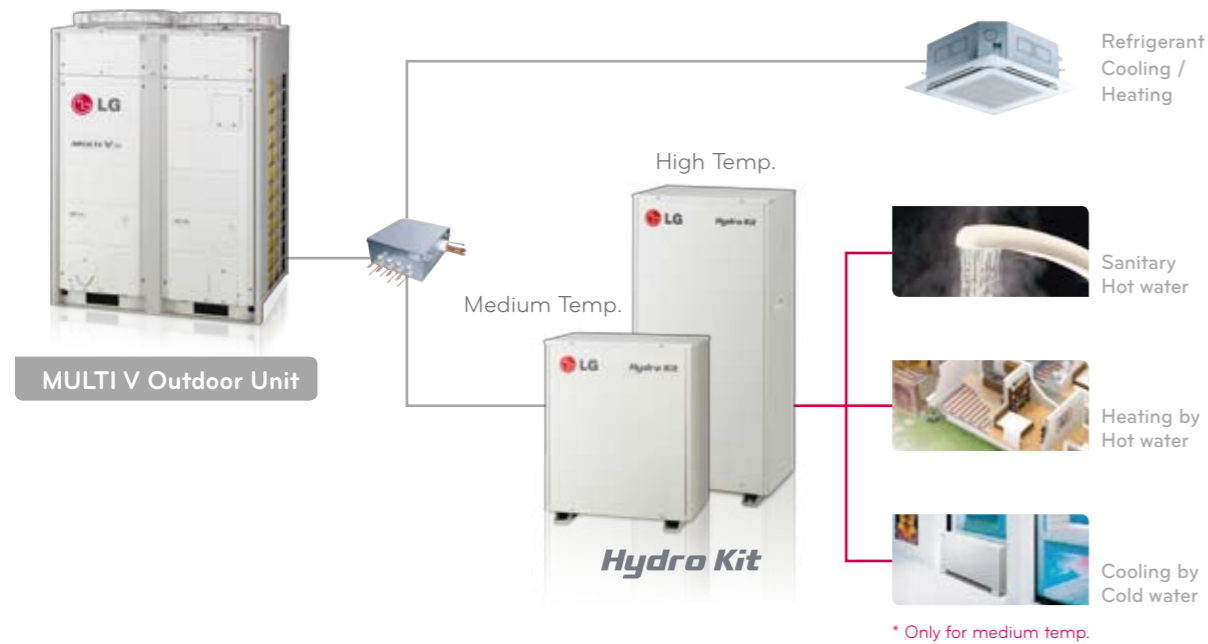
The energy savings appear any time during the year when a room needs to be cooled down. Typically, during summer, the system will use heat extracted from the indoor units to produce sanitary hot water.

LG – environmentally minded for a comfortable environment.



# What is Hydro Kit?

Hydro Kit is Eco-friendly and High-efficient. This total HVAC solution is available to Air-conditioning, floor heating, radiators and sanitary hot water supply. All these functions, utilizing a variety of MULTI V outdoor unit, minimize energy costs and CO<sub>2</sub> emissions compared to boiler system.



## Variety of Outdoor Combination

A variety of heat pump includes Air-cooled, Water-cooled and Geo-Thermal source and outdoor unit can be combined according to installation condition of building or environment temperature.

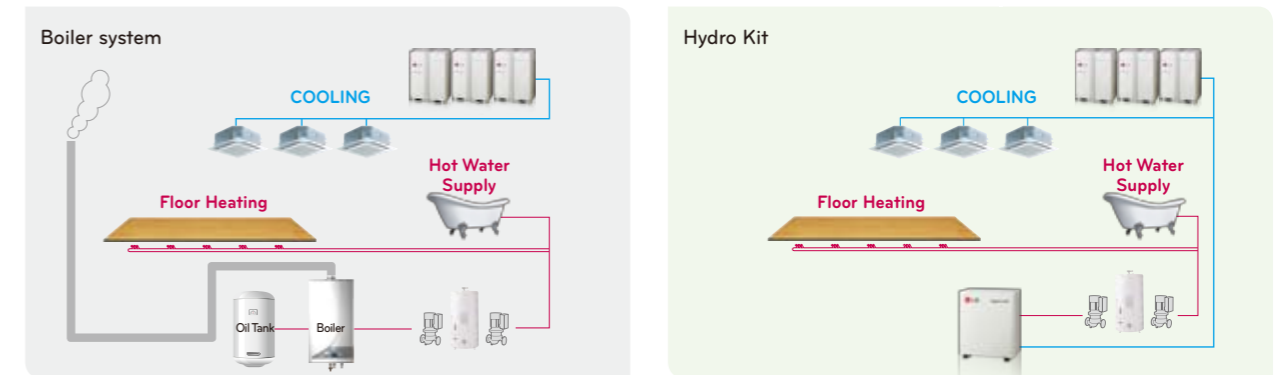


# Hydro Kit Benefits

Provides sanitary hot water supply and floor heating efficiently through lower energy costs compared to a boiler and contribute to green energy environment through reduction of CO<sub>2</sub> emissions.

## Easy Installation

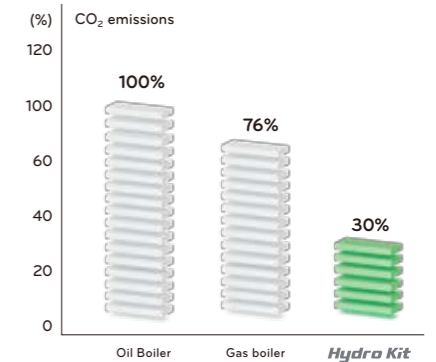
Unnecessary to duct for emitting gas, easy to install as compact and modular structure



## Eco-friendly Green Energy Solution

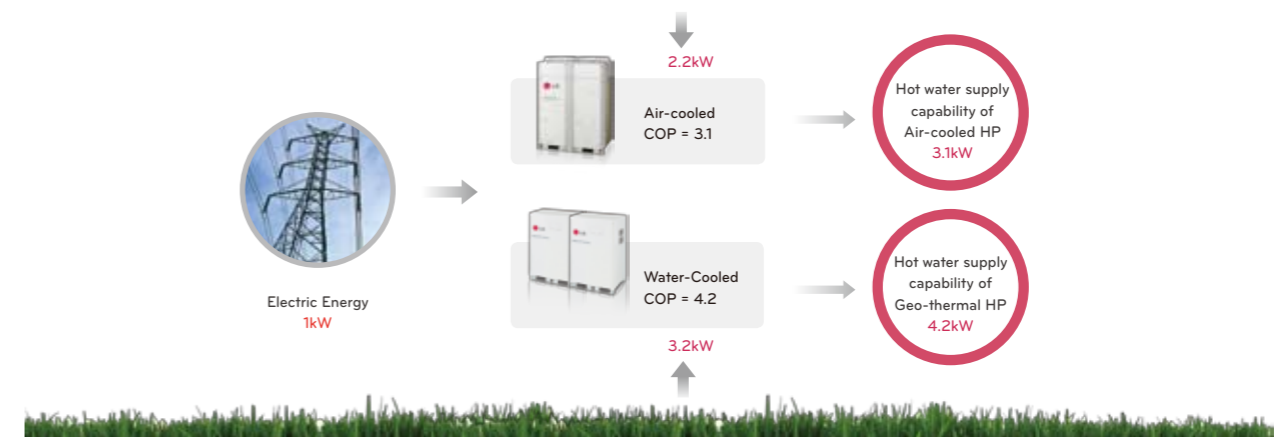
### Eco-friendly system

Green energy solution through reduction of CO<sub>2</sub> emissions



## High-Efficiency Products

Provide High-efficiency, hot water solution by connection of variable VRF.

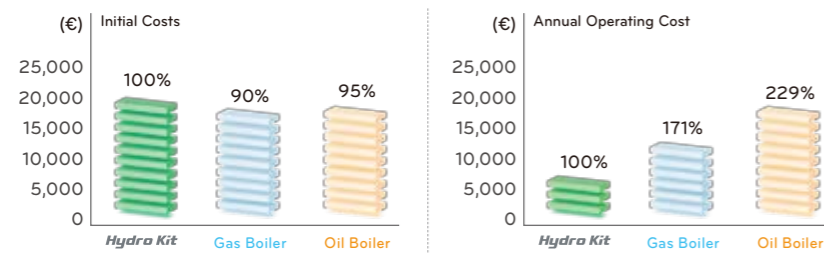


# Economics

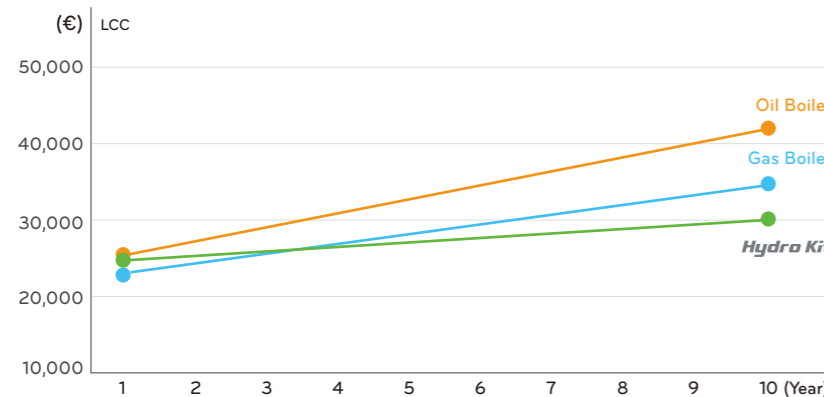
High economic efficiency through lower energy costs compared to hot water system of boiler

## High Economical Efficiency through Energy Saving

Possible to install with equivalent level of an initial cost as the boiler system and minimize energy costs by low-priced operating costs.



- 1<sup>st</sup> Proposal MULTI V Hydro Kit (Air Conditioning + Hot water supply + Floor Heating)
- 2<sup>nd</sup> Proposal MULTI V Air-conditioning + Gas Boiler (Hot water supply + Floor Heating)
- 3<sup>rd</sup> Proposal MULTI V Air-conditioning + Oil Boiler (Hot water supply + Floor Heating)



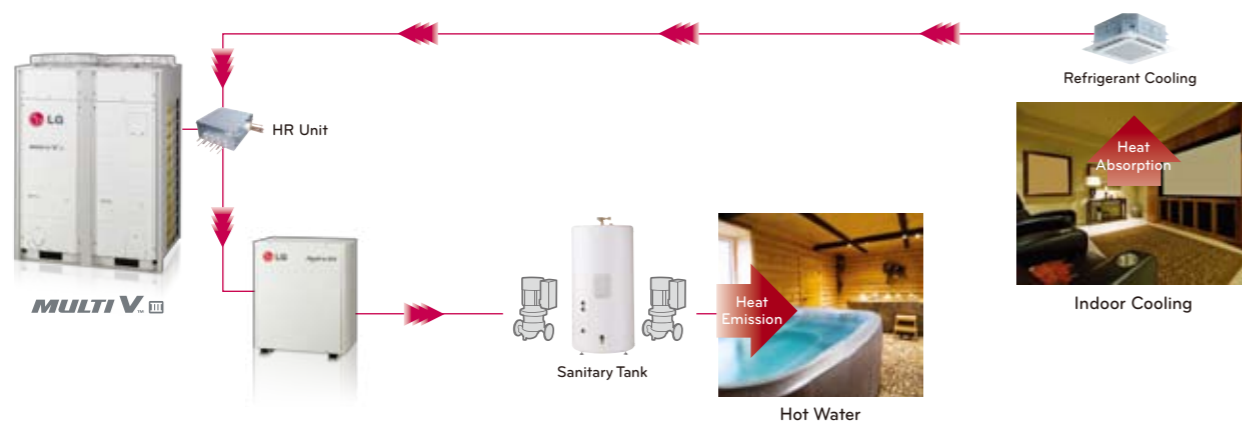
### Analysis Conditions

- Building Type : Dormitory, flats
- Cooling / Floor Heating / Sanitary Hot water for 10 years
- Cooling : MULTI V Indoor unit
- Floor Heating : Medium Temp. Hydro kit (1ea)
- Sanitary Hot water : High Temp. Hydro kit (2ea), sanitary Hot water tanks
- Electricity cost : Average cost in EU
- Gas cost : Average cost in EU
- Oil cost : Average cost in EU

\*Condition of analysis : Except for common items includes Sanitary tank, floor heating coil expense  
 \*Economic efficiency is changeable according to design concept, detailed specification of system

## Energy Saving through Heat Recovery

Energy costs can be saved by using wasted heat source from indoor to outdoor at cooling.



# High Temperature of Hydro Kit

## High Temperature of Hydro Kit Concept



### Dual inverter cascade cycle technical

- Max 55% capacity improvement better than medium temperature of Hydro Kit
- Max 20% heating operating cost reduction better than medium temperature of Hydro Kit

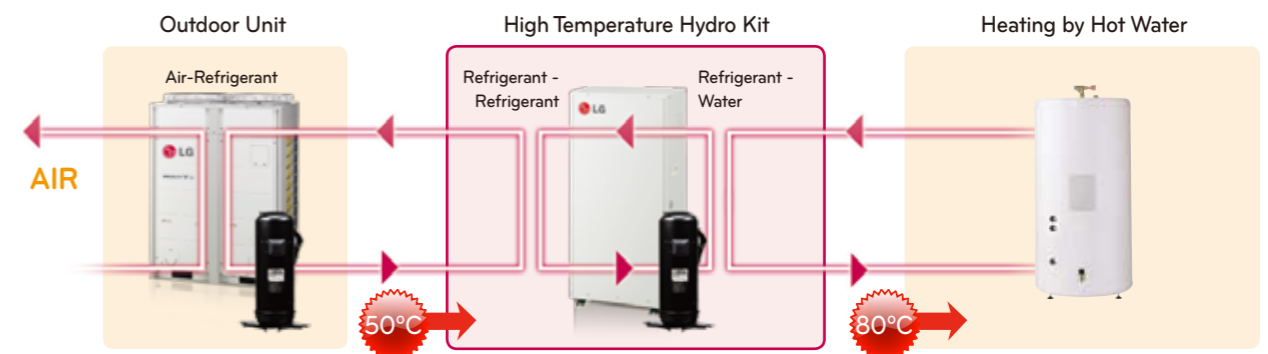
### High volume of Domestic hot water

- Compared to lower temperature, storing high temperature water in a sanitary tank increases a lot the quantity of mixed water available for the user.

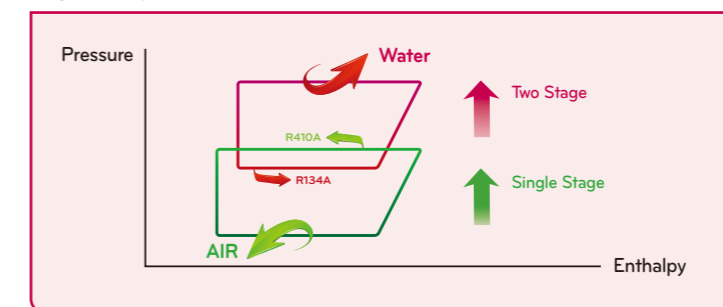
### Cascade R410A to R134a inverter compressor technology

- Leaving water temperature up to 80°C

## High Temperature of Hydro Kit Cycle Diagram



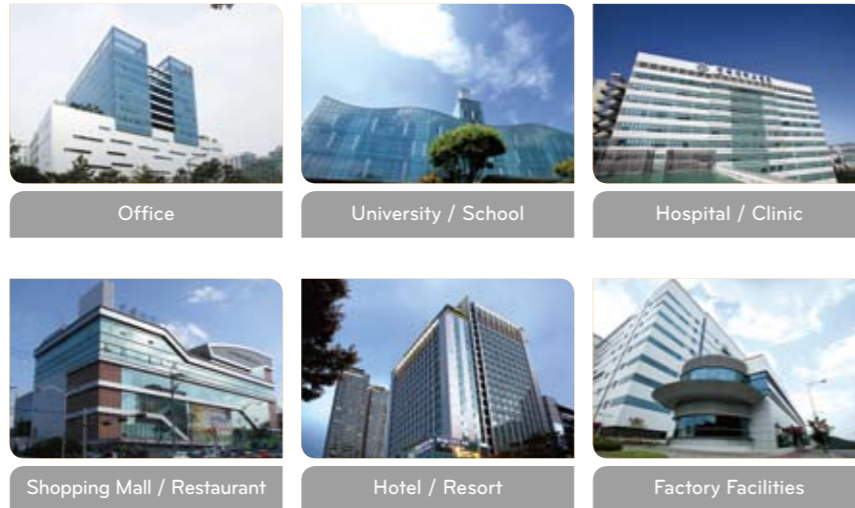
### High Temperature Technical



# Application

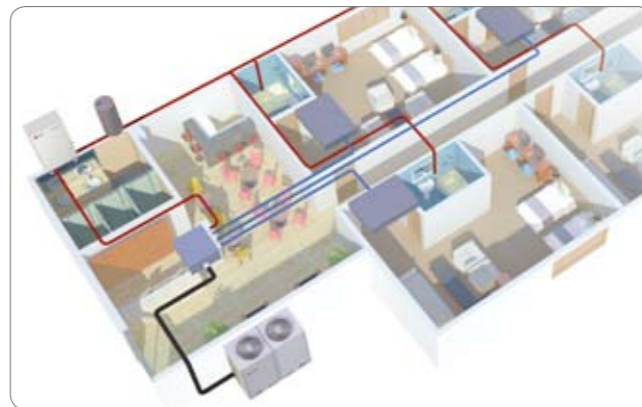
## Various Application

Applicable to a variety of facilities includes hospitals, residences and resorts that need water heating and Domestic hot water supply.



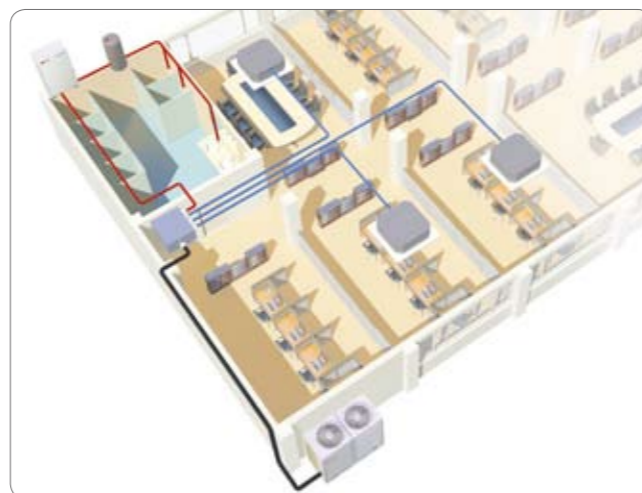
## Hotel

Constant cooling & heating are possible at the same time during summer time provide hot water for bathroom using waste heat energy from indoor cooling by indoor unit.



## Office

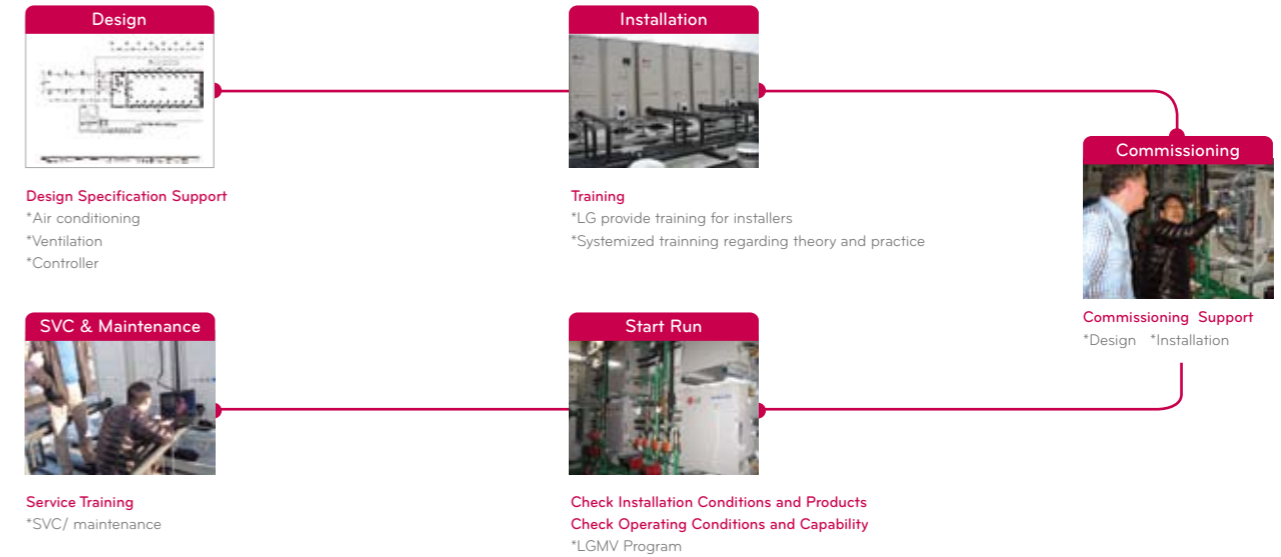
In the office while cooling HR unit makes sanitary tank to be warmed using waste energy, hot water can be supplied at all times.



# Quality Control & Specification

LG provides a perfect management from design to service & maintenance.

## Quality Control



## Specification

Type	Hydro Kit (Medium Temp.)		Hydro Kit (High Temp.)	
Model	ARNH10GK2A2		ARNH08GK3A2	
Power Supply	Ø / V / Hz		1 / 220-240 / 50	
Capacity (Rated) Cooling	kW		29.0	
Capacity (Rated) Heating	kW		32.0	
Input (Rated) Cooling	kW		0.01	
Input (Rated) Heating	kW		0.01	
Casing	Painted Steel Plate		Painted Steel Plate	
Dimensions Body	W x H x D mm		520 x 631 x 330	
Net Weight Body	kg (lbs)		20-15/32 x 24-27/32 x 13	
Heat Exchanger Refrigerant to Water	Type	Brazed Plate HEX	Type	Brazed Plate HEX
	Rated Water Flow	L/min		36.0
	Head Loss	kPa		20.0
Heat Exchanger Refrigerant to Refrigerant	Type	-	Type	Brazed Plate HEX
Compressor	Type	-	Type	Twin Rotary Inverter
Piping Connections Water Side	Inlet	inch	Inlet	Male PT 1
	Outlet	inch	Outlet	Male PT 1
Piping Connections Refrigerant Side	Liquid	mm(inch)	Liquid	Ø 9.52(3/8)
	Gas	mm(inch)	Gas	Ø 22.2(7/8)
Drain Piping Connection		inch		Male PT 1
Sound Press Level Cooling	dB(A)		26	
Sound Press Level Heating	dB(A)		26	
Power Supply Cable	No. x mm <sup>2</sup>		3C x CV2.5	
Communication cable	No. x mm <sup>2</sup>		2C x CVW-SB 1.0-1.5	
Refrigerant Refrigerant to Refrigerant	Refrigerant name	-	Refrigerant name	R410A
	Control	-	Control	Electronic Expansion Valve
Refrigerant Refrigerant to Water	Refrigerant name	R410A	Refrigerant name	R134a
	Precharged Amount	kg (lbs)		3.0 (6.6)
	Control	EEV	Control	EEV

\*Notes  
 Capacities are based on the following conditions:  
 1. Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB, Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB, Water Inlet 23°C(73.4°F) / Outlet 18°C(64.4°F)  
 2. Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB, Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB, \* Water Inlet 30°C(86°F) / Outlet 35°C(95°F), \*\* Water Inlet 55°C(131°F) / Outlet 65°C(149°F)  
 3. Piping Length : Interconnected Pipe Length = 7.5m  
 4. Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.  
 \* Medium Temp. \*\* High Temp.