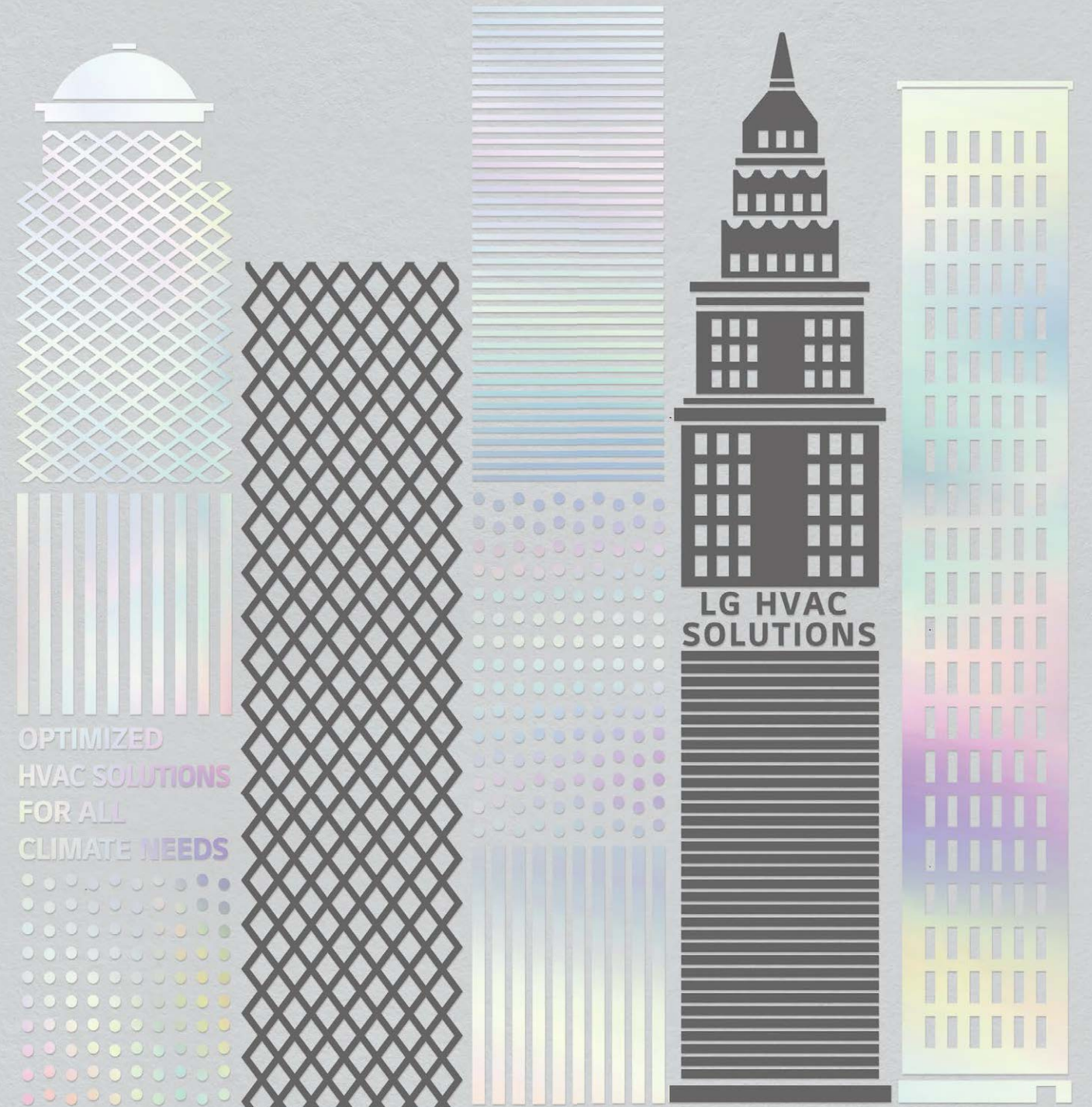


LG ELECTRONICS

# LG HVAC SOLUTION GUIDE



**LG Electronics**

<http://www.lg.com>  
<http://partner.lge.com>

Distributed by

# LETTER FROM VICE PRESIDENT

## LG ELECTRONICS AIR SOLUTION COMPANY

### GLOBAL SYSTEM AIR CONDITIONING SALES & MARKETING DIVISION

At LG Electronics Inc, one of our primary goals is to help foster the success of our business partners. This year, we thought about what we could introduce to our existing toolkit that could be a true comprehensive guide to our business and how we can help our customers.

I would like to present [insert document title here], which can be used as an overview to our 360° business solution.

Firstly, we would like to ensure our customers are fully aware of the range of tools at their disposal, from marketing communications to detailed product information through our various online portals and applications.

We also hope to highlight our on-the-ground availability to our partners, with local LG offices as well as certified distribution channels and installation capabilities across Europe.

The LG Electronics' R&D center continues to strive for excellent innovations to contribute to our diverse product portfolio that has been established to meet the ever-changing requirements of our loyal and prospective customers.

Our collective vision is to extend our company value proposition from simply being a product manufacturer to a complete solution provider with flexible and customizable products that provide comfort, efficiency, convenience and more with world-class building management and home connectivity systems to both our business partners and our end-users.

With our engineering support systems, we also intend to support our partners with concrete simulations and analysis throughout the lifecycle of a project and beyond.

Furthermore, with an eye toward the future as our long-standing business model, we want to ensure that our spirit of innovation is sustainable and future-proof to play our part toward a more eco-conscious solution.

We hope this guide clearly summarizes the comprehensive offering we at LG Air Solution hope is a positive contribution to the future outlook of our valued partners.

Sincerely,



Hank Choi

Vice President, LG Electronics Air Solution Company  
Air Solution America/Europe/CIS Sales & Marketing Division

BRAND

BUSINESS

PRODUCTS

ENGINEERING  
TOOLS

ONLINE LG  
HVAC GUIDE

1

# BRAND

## BRAND

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GLOBAL INCESSANT DEVELOPMENT

# THE HISTORY OF LG ELECTRONICS



BRAND

1958 ~ 1990

## Building Our Base

1995 ~ 2008

## Success and Expansion

2009 ~ Now

## Driving the Industry Forward

### 1958

- Establishes Gold Star (now LG Electronics)

### 1968

- Produces Korea's first air conditioner

### 1985

- Produces Korea's first inverter air conditioner

### 1990

- Produces in-house rotary compressors

### 1995

- Rebrands company as LG Electronics

### 1998

- Produces Korea's first system air conditioner

### 2000

- Ranked No. 1 worldwide in Air Conditioner sales

### 2001

- Produces world's first frame-type air conditioner

### 2004

- Sells over 10 million units of the frame-type air conditioners

### 2007

- Ranked No. 1 worldwide in Air Conditioner sales

### 2008

- World's first frame-type Air Conditioner Produced (over 10 million units)

### 2010

- LG Electronics envisions to become the world leaders in providing HVAC & Energy Solutions

### 2011

- Launches comprehensive air conditioning capabilities - ranging from compact to large air conditioners by LS Mitron / BMS business

### 2014

- Launches a new brand "BECON" as a total Energy Solution provider

### 2015

- Produces in-house GHP 30HP

### 2017

- Produces Multi V Super 5

### 2018

- Produces Single and Multi R32 products

TOTAL HVAC & ENERGY SOLUTION PROVIDER

# BUSINESS AREA

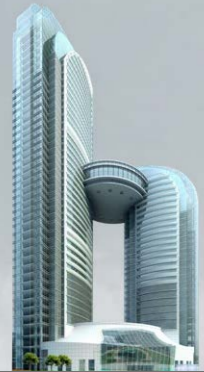


## Total HVAC & Energy Solution Provider

Expansion of the air-conditioning and energy businesses is the major growth driver of our air solution division.

### Air Solution Division

With the best air-conditioning technologies and innovative product line, LG is a trusted partner for all kinds of wind solutions



Chiller



Commercial Air Conditioning



Residential Air Conditioning



BECON



Anywhere



Anytime



Always

LG air conditioning systems include a line of products that offers optimum air conditioning and ventilating systems for small and large commercial spaces

It provides an all-inclusive air conditioning commercial solution during all hours of the day.

Furthermore, it provides combined products based on the world's best air conditioning technologies.



DEFINITION OF CORE VALUE

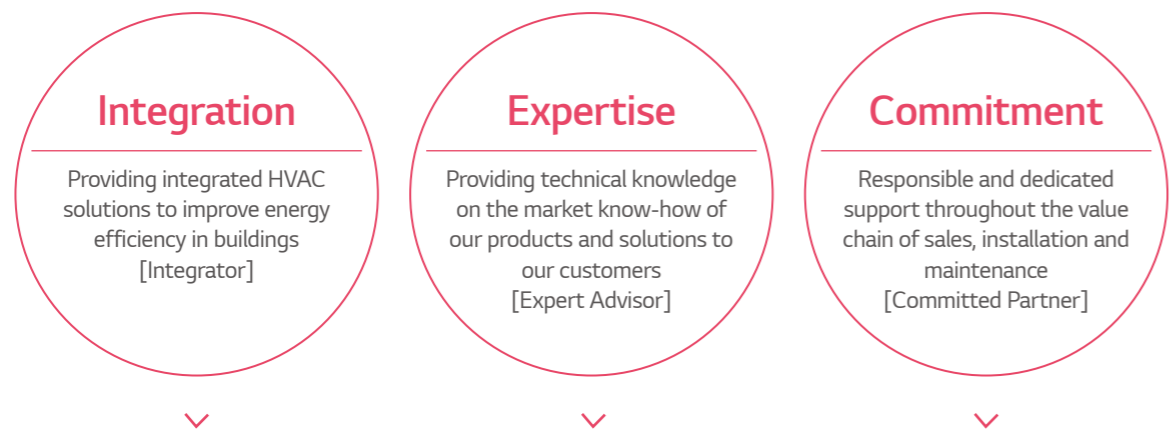
# AIR SOLUTION VISION



Vision

To become the world leaders in providing energy-efficient HVAC solutions and creating a healthy environment

BRAND



**Integration**

Providing integrated HVAC solutions to improve energy efficiency in buildings  
[Integrator]

**Expertise**

Providing technical knowledge on the market know-how of our products and solutions to our customers  
[Expert Advisor]

**Commitment**

Responsible and dedicated support throughout the value chain of sales, installation and maintenance  
[Committed Partner]



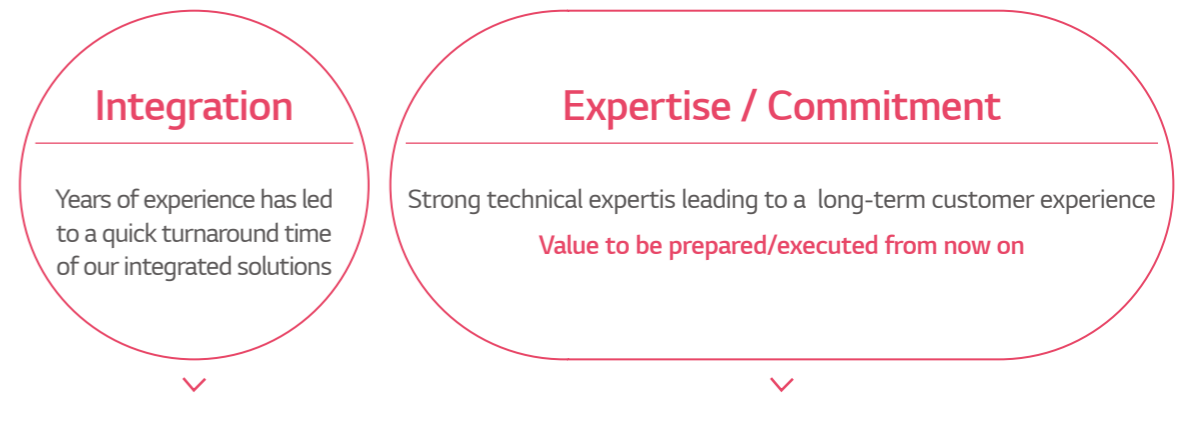
**Customer Shared Value**

- **Efficient TCO** (Total cost of ownership)
- Connectivity & Seamless UX

- **Technology Expert**
- Thought Leader
- Proactive Advisory

- **Trusted Partner**
- Long-term Companion
- Dedicated Listener

Core Value Attribute



**Integration**

Years of experience has led to a quick turnaround time of our integrated solutions

**Expertise / Commitment**

Strong technical expertise leading to a long-term customer experience  
**Value to be prepared/executed from now on**



Strategic Approach

Building omnichannel communication plan

Long-term investment in product development

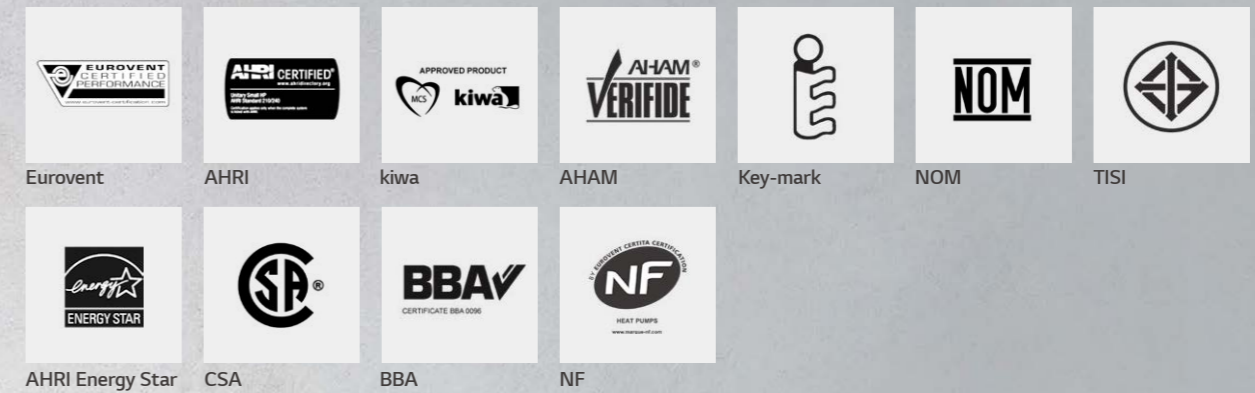
3RD PARTY RECOGNITION  
**AWARDS & CERTIFICATIONS**



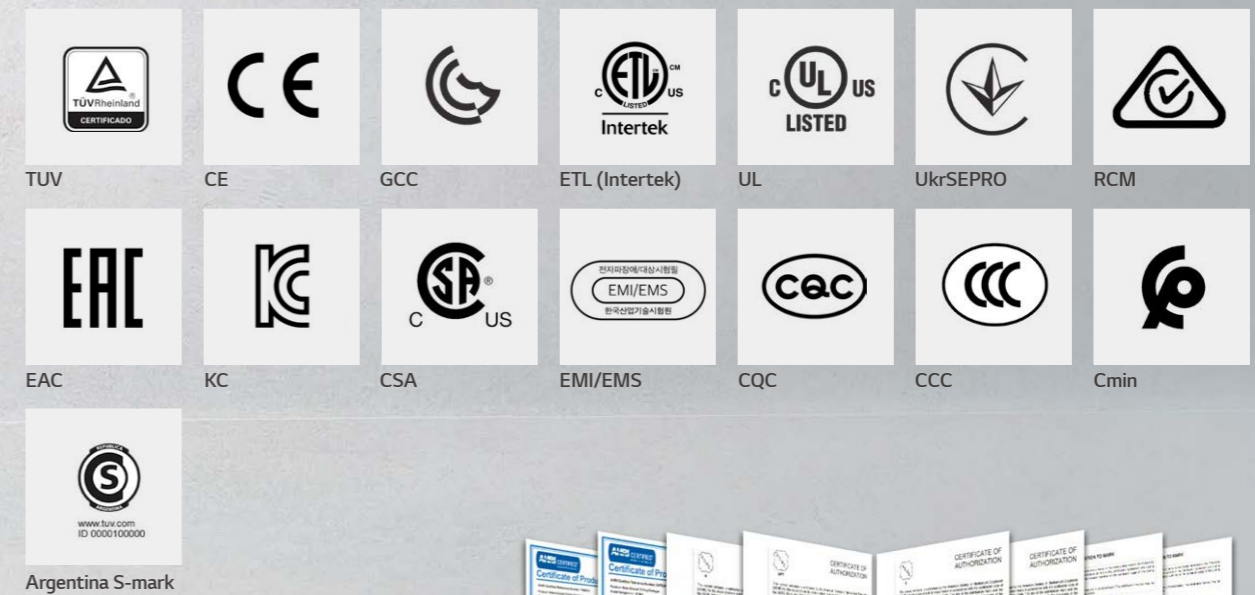
Certified by Global Party Organizations



**ENERGY**



**SAFETY**



PRODUCT RANGE

# AIR CONDITIONING (Outdoor Unit)



## MULTI V<sup>5</sup>



### MULTI V<sup>S</sup>

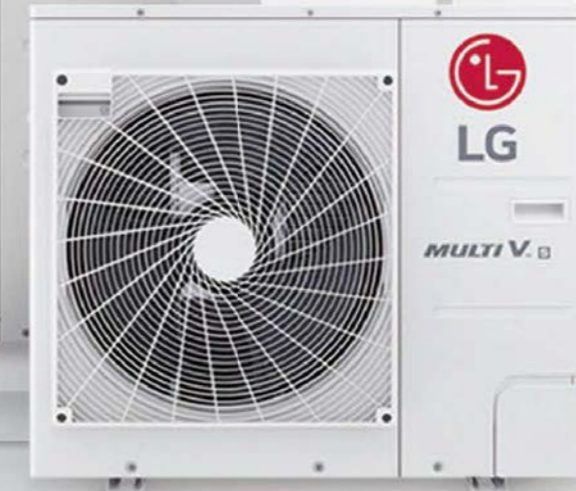
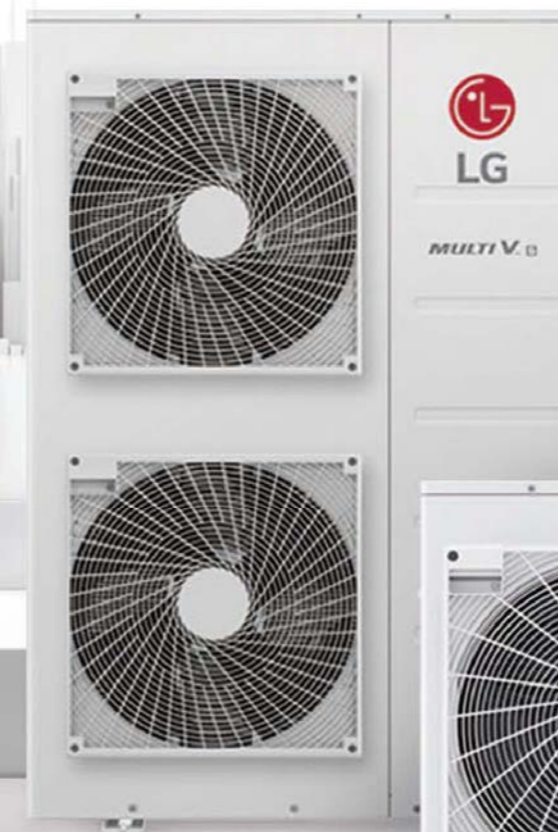
#### Multi Split

Multi Piping Type

#### Multi Split

Distributor Box Type

#### Single Split



#### Air-cooled Inverter Scroll Chiller



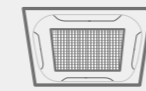
#### MULTI V<sup>WATER</sup>



BRAND

PRODUCT RANGE

# AIR CONDITIONING (Indoor Unit)

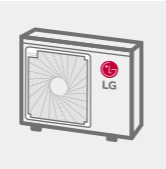


BRAND



PRODUCT RANGE

# HEATING



**THERMAV™ IWT**  
R32 IWT



**THERMAV™**  
R32 Hydrosplit

**THERMAV™**



**THERMAV™**  
R32 Monobloc

**THERMAV™**



**THERMAV™**  
R32 Split



**THERMAV™**  
High Temp



**HYDRO KIT**  
Wall Type

















**HYDRO KIT**



BRAND

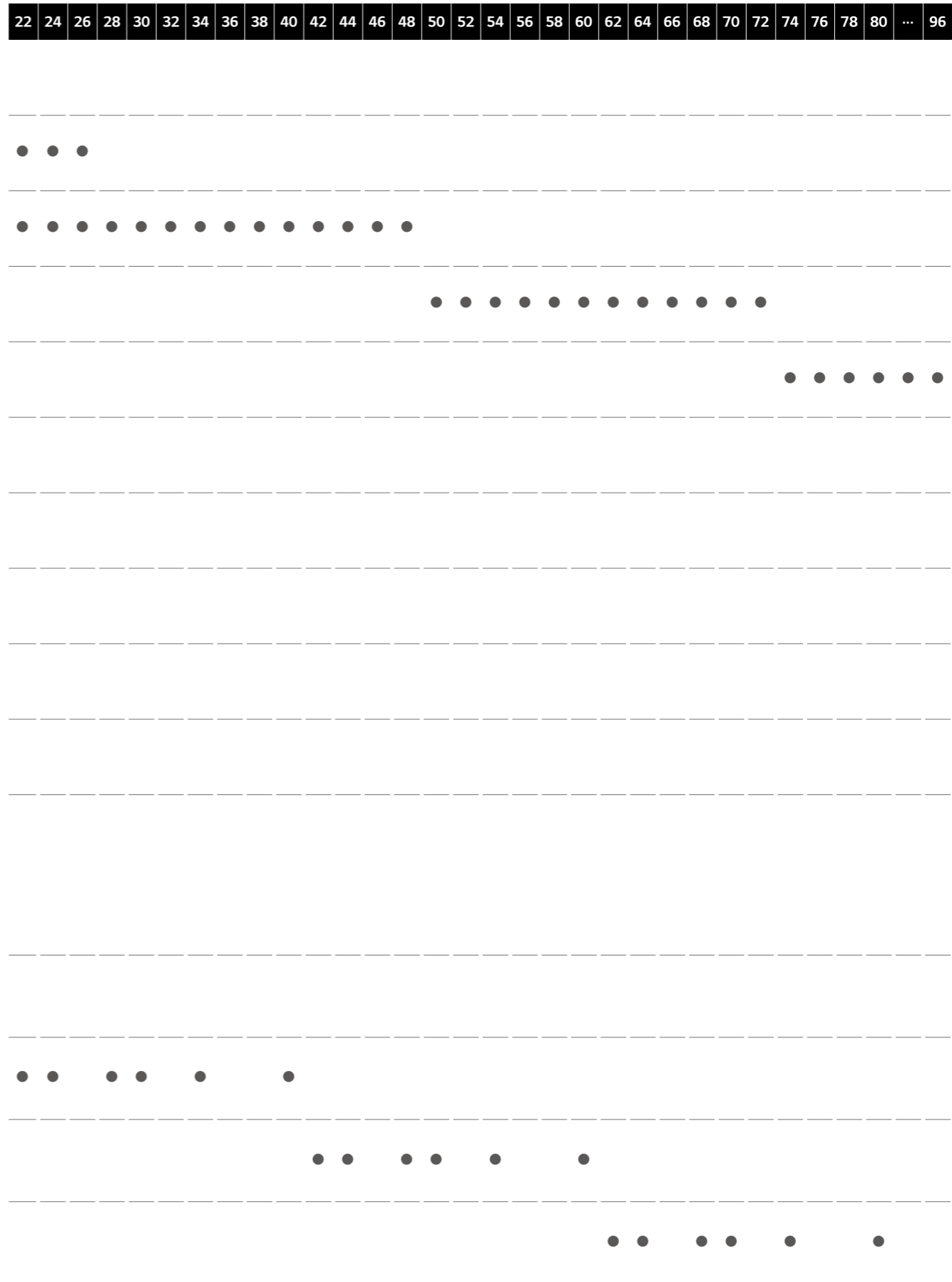
LINE UP  
**MULTI V™**  


**OUTDOOR UNITS LINE-UP**

Features	Appearance	4	5	6	8	10	12	14	16	18	20						
<b>MULTI V™ 5</b> • Dual Sensing Control • Large capacity ODU (Up to 26HP) • Continuous Heating • Black Fin heat exchanger • Heat pump or heat recovery function • Flexible installation with heat recovery unit and large capacity • For large space, high rise building and individual Control building  Multi V 5 : ARUM***LTE5					●	●	●										
								●	●	●	●						
																	
																	
																	
<b>MULTI V™ S</b> • Space saving • Flexible design applications - Slim, light, and broad range (4 - 12 HP) - Large number of connectable indoor units (Up to 20 Units) • For small / medium building  Multi V S : ARUN***GSS0 / ARUN***LSS0			○	○													
					●	○	○	○									
							●	●	●								
<b>MULTI V™ S</b> Heat Recovery Multi V S Heat recovery : ARUB***GSS4								○									
<b>MULTI V™ S</b>  R32 Multi V S R32 : ZRUN***GSS0 / ZRUN***LSS0			○	○	○	○	○										
<b>MULTI V™ M</b> • High flexibility of installation • Quiet operation • Various indoor unit combinations & long distance between modules  Multi V M : ARUN***LMS0					●												
<b>MULTI V™ WATER</b> Heat Pump / Heat Recovery • High efficiency system regardless external conditions • Indoor installation • Low noise operation (No fan) • For water-sourced system, high rise building and building with aesthetic requirements. • Simultaneous cooling and heating • Minimized energy cost by water sourced heat recovery system • For individual Control building  Multi V Water : ARWN***LAS4 / ARWB***LAS4					●	●	●	●			●						
									●	●							
										●	●	●	●				
													●	●	●	●	●

Unit : HP  
 ● 380V, 3Ø ○ 220V, 1Ø

22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 ... 96



BRAND

※ Products which contain R410A (GWP 2087.5) are pre charged over 1.8kg- and t-CO<sub>2</sub> eq is over 3.8-  
 Products which contain R32 (GWP 675) are pre charged over 1.5kg- and t-CO<sub>2</sub> eq is over 1.01-  
 (The values are changed by the capacities of products)



# HVAC CONTROL



PRODUCT		PRODUCT				
Individual Control	Standard	Standard III (White) PREMTB100	Standard III (Black) PREMTBB10	Standard II (White) PREMTB001	Standard II (Black) PREMTBB01	Premium PREMTA000 PREMTA000A PREMTA000B
	Wired Remote Controller					
	Simple	PQRCVCL0QW	PQRCVCL0Q	PQRCHCA0QW (Simple for Hotel)	PQRCHCA0Q (Simple for Hotel)	
Wireless Remote Controller	 PWLSSB21H (Heat Pump) PWLSSB21C (Cooling Only)		 WI-FI Modem For Indoor Unit PWFMD200			
	Display	AC Ez PQCSZ250S0 (Indoor Unit -32)	AC Ez Touch PACEZA000 (Indoor Unit -64)	AC Smart 5 PAC5A000 (Indoor Unit - 128) BACnet IP / Modbus TCP		
Centralized Control	Platform	ACP 5 PACP5A000 (Indoor Unit - 256) BACnet IP / Modbus TCP	AC Manager 5 PACM5A000 (Indoor Unit - 8,192)			
	Gateway	ACP LonWorks (Indoor Unit -64) PLNWKB000	Modbus RTU Gateway PMBUS00A	PI-485 For Indoor Unit (ERV) PHNFP14A0	PI-485 For Outdoor Unit (SINGLE / MULTI / THERMA V) PMNFP14A1	

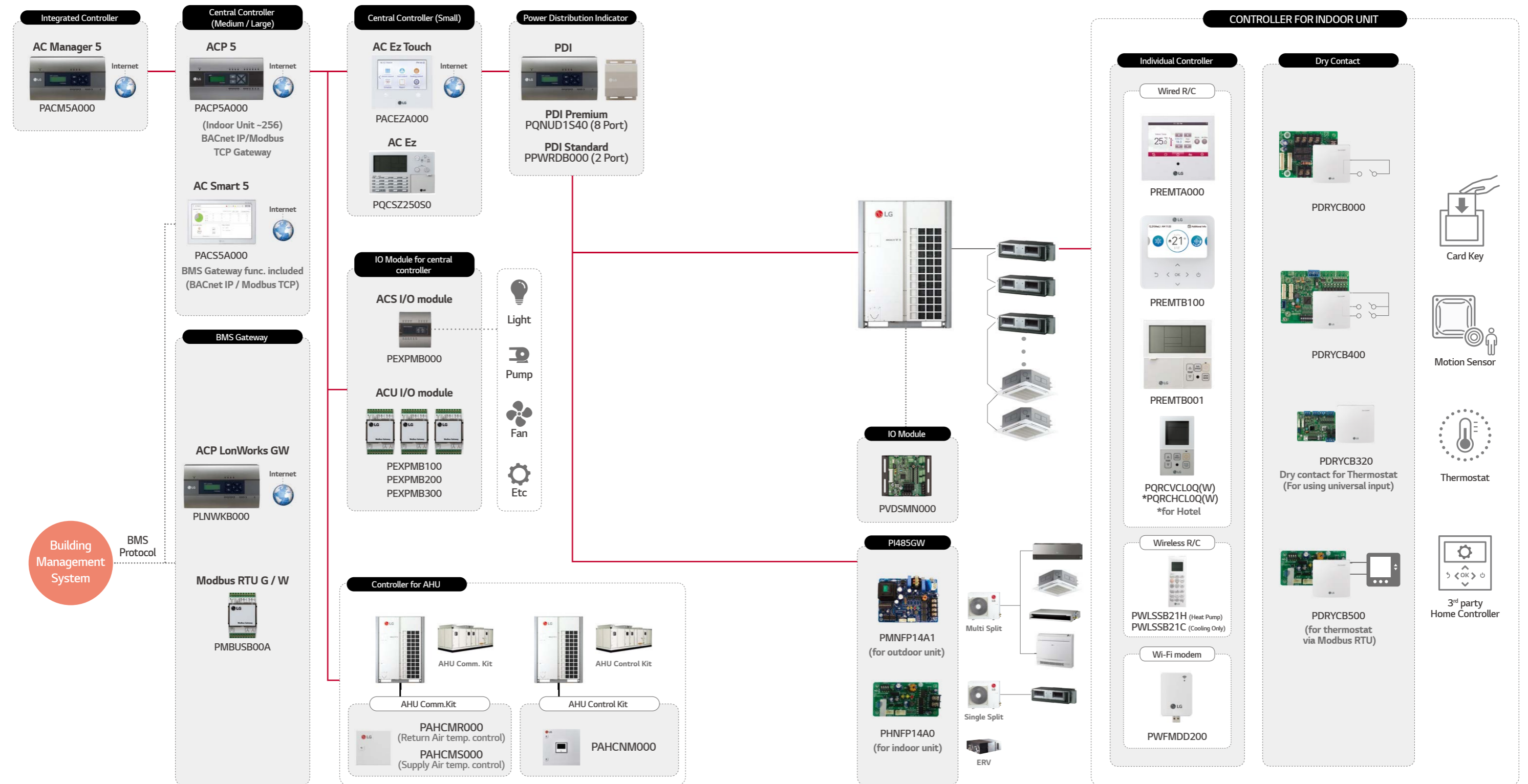
PRODUCT		PRODUCT				
Centralized Control	Facility Integrator	PDI (Power Distribution Indicator) Premium (8 ports) PQNUD1S40 Standard (2 ports) PPWRDB000	ACS IO Module (Input / Output Module) PEXPMB000	Chiller Option Kit PCHLLN000	ACU IO Module UIO UIO UI PEXPMB300 PEXPMB200 PEXPMB100	
	Dry Contact	Simple Dry Contact PDRYCB000	Dry contact for Thermostat (For using universal input) PDRYCB320	2 Points Dry Contact (For Setback) PDRYCB400	For Modbus PDRYCB500	
Indoor Unit	Control Accessory	Group Control Wire PZCWRCG3	Remote Temperature Sensor PQRSTA0	Zone Controller 4 Zones by thermostat ABZCA	Independent Power Module PRIPO	
		Integration Device	Outdoor Unit	IO Module (Input / Output Module) For MULTI V 5 PVDSMN000	Variable Water Flow Control kit For MULTI V WATER IV PWFCN000	Low Ambient Kit For MULTI V IV, 5 PRVC2
AHU Kit	AHU Kit	Communication Kit		Controller Module		Control kit
		Return / Room Air Control PAHCMR000	Discharge / Supply Air Control PAHCM5000	Main module PAHCM0000	Communication module PAHCMC000	PAHCM000 (Max 3 Outdoor Units)
		EEV Kit (Electronic Expansion Valve)				
		Indoor Unit PRLK048A0 (~ 28 kW) PRLK096A0 (~ 56 kW)	Outdoor Unit PRLK396A0 (~ 112 kW)	AHU Kit PRLK594A0 (~ 168kW)		

LINE UP

# HVAC CONTROL



## CONTROL SYSTEM ARCHITECTURE



LG BECON HVAC Solution offers a diverse range of effective control solutions that satisfy specific needs of each building and its user scene. These control systems are equipped with user-friendly interface, flexible interlocking environment, energy management and smart individual controller for optimized controlling conditions and smart building management

BRAND

LINE UP

# WALL-MOUNTED



## INDOOR UNITS

○ Single Split Only   ● Compatible   ● Multi Split Only

MODEL	KBTU	5	7	9	12	15	18	24
	KW	1.5	2.1	2.6	3.5	4.2	5.3	7.0
ARTCOOL	Gallery				○ A09FT NSF   ○ A12FT NSF			
	Mirror			● AM07BH NSJ	○ AC09BH NSJ   ○ AC12BH NSJ		○ AC18BH NSK   ○ AC24BH NSK	
DUALCOOL	Prestige				○ F09MT NSM   ○ F12MT NSM			
	Air Purification				○ AP09RT NSJ   ○ AP12RT NSJ			
DUALCOOL	Deluxe			● DM07RH NSJ	○ DC09RH NSJ   ○ DC12RH NSJ		○ DC18RH NSK   ○ DC24RH NSK	
	Deluxe 2				○ DC09RT NSJ   ○ DC12RT NSJ			
DUALCOOL	Standard Plus		● PM05SP NSJ   ● PM07SP NSJ	○ PC09SQ NSJ   ○ PC12SQ NSJ	● PM15SP NSJ	○ PC18SQ NSK   ○ PC24SQ NSK		
	Standard 2		● MS07ET NSJ	○ S09ET NSJ   ○ S12ET NSJ		○ S18ET NSK   ○ S24ET NSK		
DUALCOOL	Standard			○ S09EQ NSJ   ○ S12EQ NSJ		○ S18EQ NSK   ○ S24EQ NSK		
	Standard 3			○ S09EH NSA   ○ S12EH NSJ				

※ Refer to multi split line up for 5, 7, 15KBTU indoor unit connection.  
 ※ Products which contain R32 (GWP 675) are pre-charged over 0.6kg- and t-CO<sub>2</sub> eq is over 0.41-.  
 (The values are changed by the capacities of products)

## OUTDOOR UNITS

○ Single Split Only   ○ ● Compatible   ● Multi Split Only

MODEL	KBTU	9	12	14	16	18	21	24	27	30
	KW	2.6	3.5	4.1	4.7	5.3	6.2	7.0	7.9	8.8
ARTCOOL	Gallery		○ A09FT UL2   ○ A12FT UL2							
	Mirror		○ AC09BH UA3   ○ AC12BH UA3			○ AC18BH UL2		○ AC24BH U24		
DUALCOOL	Prestige		○ F09MT U24   ○ F12MT U24							
	Air Purification		○ AP09RT UA3   ○ AP12RT UA3							
DUALCOOL	Deluxe		○ DC09RH UL2   ○ DC12RH UL2			○ DC18RH UL2		○ DC24RH U24		
	Deluxe 2		○ DC09RT UA3   ○ DC12RT UA3							
DUALCOOL	Standard Plus		○ PC09SQ UA3   ○ PC12SQ UA3			○ PC18SQ UL2		○ PC24SQ U24		
	Standard 2		○ S09ET UA3   ○ S12ET UA3			○ S18ET UL2		○ S24ET U24		
DUALCOOL	Standard		○ S09EQ UA3   ○ S12EQ UA3			○ S18EQ UL2		○ S24EQ U24		
	Standard 3		○ S09EH UA3   ○ S12EW UA3							

BRAND

LINE UP

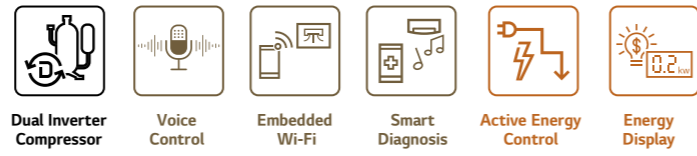
# WALL-MOUNTED



## FEATURE OVERVIEW



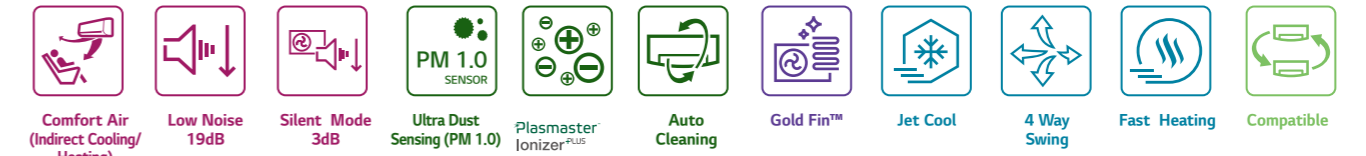
**CORE TECH** **SMART** **ENERGY EFFICIENCY**



■ Cooling ■ Heating

Model	Capacity	Cooling	Heating	Dual Inverter Compressor	Voice Control	Embedded Wi-Fi	Smart Diagnosis	Active Energy Control	Energy Display
ARTCOOL	Gallery	9k 12k	●	●	●	●	●	●	●
	Mirror	9k 12k 18k 24k	●	●	●	●	●	●	●
DUALCOOL	Prestige	9k 12k	●	●	●	●	●	●	●
	Air Purification	9k 12k	●	●	●	●	●	●	●
	Deluxe	9k 12k 18k 24k	●	●	●	●	●	●	●
		Only for Multi 7k <sup>4)</sup>	●	●	●	●	●	●	●
	Deluxe 2	9k 12k	●	●	●	●	●	●	●
		Only for Multi 7k <sup>4)</sup>	●	●	●	●	●	●	●
	Standard Plus	9k 12k 18k 24k	●	●	●	●	●	●	●
		Only for Multi 5k 7k 15k <sup>4)</sup>	●	●	●	●	●	●	●
		Standard 2	9k 12k 18k 24k	●	●	●	●	●	●
			Only for Multi 7k <sup>4)</sup>	●	●	●	●	●	●
Standard	9k 12k 18k 24k	●	●	●	●	●	●		
	9k 12k	●	●	●	●	●	●		
Standard 3	9k 12k	●	●	●	●	●	●		

**COMFORT** **HEALTHCARE** **DURABILITY** **FAST COOLING & HEATING** **MULTI**

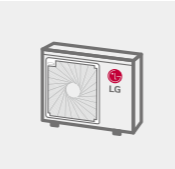


Model	Comfort Air (Indirect Cooling/Heating)	Low Noise 19dB	Silent Mode 3dB	Ultra Dust Sensing (PM 1.0)	Plasmaster Ionizer	Auto Cleaning	Gold Fin™	Jet Cool	4 Way Swing	Fast Heating	Compatible
Gallery	●	●	●	●	●	●	●	●	3 way	●	●
Mirror	●	●	●	●	●	●	Black Fin	●	●	●	●
Prestige	●	●	●	●	●	●	●	●	●	●	●
Air Purification	●	●	●	●	●	●	●	●	●	●	●
Deluxe	●	●	●	●	●	●	●	●	●	●	●
Deluxe 2	●	●	●	●	●	●	Black Fin	●	●	●	●
Standard Plus	●	●	●	●	●	●	Black Fin	●	●	●	●
Standard 2	●	●	●	●	●	●	Black Fin	●	●	●	●
Standard	●	●	●	●	●	●	●	●	(18/24k Only)	●	●
Standard 3	●	●	●	●	●	●	●	●	●	●	●

Feature may vary for each model.  
 1. When connected to Multi Outdoor unit, Silent Mode 3dB is working by simply setting the dip switch on the PCB of the outdoor unit.  
 2. When combines with 40kBTu, Cooling A+, Heating A  
 3. Wi-Fi Ready : can be connected by using Wi-Fi Controller (PWFMD200)  
 4. Please refer to the specifications of Multi outdoor units.

BRAND

# LINE UP MULTI SPLIT



## R32 INDOOR / OUTDOOR UNITS

○ Single Only ● Compatible with Single split ○○ Compatible with Single CAC ● Multi Only

KBTU/H		5	7	9	12	15	18	24	
KW		1.5	2.1	2.6	3.5	4.2	5.3	7.0	
Wall Mounted	ARTCOOL Gallery			● MA09R NF1	● MA12R NF1				
	ARTCOOL Mirror		● AM07BH NSJ	○○ AC09BH NSJ	○○ AC12BH NSJ		○○ AC18BH NSK	○○ AC24BH NSK	
	Air - Purification			○○ AP09RT NSJ	○○ AP12RT NSJ				
	Deluxe		● DM07RH NSJ	○○ DC09RH NSJ	○○ DC12RH NSJ		○○ DC18RH NSK	○○ DC24RH NSK	
	Standard Plus		● PM05SP NSJ	● PM07SP NSJ	○○ PC09SQ NSJ	○○ PC12SQ NSJ	● PM15SP NSJ	○○ PC18SQ NSK	○○ PC24SQ NSK
			● MJ05PC NSJ	● MJ07PC NSJ	○○ MJ09PC NSJ	○○ MJ12PC NSJ	● MJ15PC NSJ	○○ MJ18PC NSK	○○ MJ24PC NSK
Standard 2		● MS07ET NSJ	● S09ET NSJ	○○ S12ET NSJ			○○ S18ET NSK	○○ S24ET NSK	
Ceiling Mounted Cassette	1 Way Cassette			● MT09R NU1	● MT11R NU1				
	4 Way Cassette		● MT06R NR0	● MT08R NR0	○○ CT09F NR0	○○ CT12F NR0	○○ CT18F NQ0	○○ CT24F NB0	
Ceiling Concealed Duct	Mid / High Static Pressure						○○ CM18F N10	○○ CM24F N10	
	Low Static Pressure			○○ CL09F N50	○○ CL12F N50		○○ CL18F N60	○○ CL24F N30	

KBTU/H	14	16	18	21	24	27	30
KW	4.1	4.7	5.3	6.2	7.0	7.9	8.8

Multi							
-------	--	--	--	--	--	--	--

※ All indoor units are compatible with R410A outdoor units.

## R410A INDOOR / OUTDOOR UNITS

KBTU/H		5	7	9	12	15	18	24
KW		1.5	2.1	2.6	3.5	4.2	5.3	7.0

Ceiling & Floor Convertible				● CV09 NE2	● CV12 NE2			
Console				● CQ09 NA0	● CQ12 NA0		● CQ18 NA0	

KBTU/H	40	48	56
KW	11.7	14.1	16.4

Multi	Multi Piping			
	Distribution Box			

※ Products which contain R410A (GWP 2087.5) are pre charged over 3.4kg- and t-CO<sub>2</sub> eq is over 7.098-  
 Products which contain R32 (GWP 675) are pre charged over 1.1kg- and t-CO<sub>2</sub> eq is over 0.74-  
 (The values are changed by the capacities of products)

## FEATURE OVERVIEW

REFRIGERANT	R32								R410A			
	TYPE	MULTI PIPING								DB BOX TYPE		
		14	16	18	21	24	27	30	40	40	48	56
kBtu/h	4.1	4.7	5.3	6.2	7.0	7.9	8.8	11.7	11.7	14.1	16.4	
BLDC Comp & Fan Motor	●	●	●	●	●	●	●	●	●	●	●	
Eurovent Certification	●	●	●	●	●	●	●	●	●	●	●	
Variable Voltage Control			●	●	●	●	●	●	●	●	●	
Wide Louver Plus Fin	●	●	●	●	●	●	●	●	●	●	●	
Optimized Heat Exchanger Path	●	●	●	●	●	●	●	●	●	●	●	
Power Saving Start up			●	●	●	●	●	●	●	●	●	
Peak Current Control	●	●	●	●	●	●	●	●	●	●	●	
Standby Mode	●	●	●	●	●	●	●	●	●	●	●	
Mode Lock	●	●	●	●	●	●	●	●	●	●	●	
R1 Compressor								●	●	●	●	
Twin Rotary Compressor	●	●	●	●	●	●	●	●	●	●	●	
Smart Sensor Pressure Control			●	●	●	●	●	●	●	●	●	
Black Fin Heat Exchanger	●	●	●	●	●	●	●	●	●	●	●	
Fast Cooling & Heating			●	●	●	●	●	●	●	●	●	
Night Silent Operation	●	●	●	●	●	●	●	●	●	●	●	
Wiring Error Check	●	●	●	●	●	●	●	●	●	●	●	
LG MV	●	●	●	●	●	●	●	●	●	●	●	
PI-485 Connection			●	●	●	●	●	●	●	●	●	
Forced Cooling Operation	●	●	●	●	●	●	●	●	●	●	●	

BRAND



LINE UP

# SINGLE SPLIT



## H-INVERTER (R32) / STANDARD INVERTER (R32)

kBTu/h		9	12	18	24	30	36	42	48	60	70	85
kW		2.5	3.4	5.0	6.8	8.0	9.5	12.0	13.4	14.6	20.0	25.0
H-INVERTER (R32)	Ceiling Mounted Cassette	UT09FH NQ0	UT12FH NQ0	UT18FH NB0	UT24FH NAO	UT30FH NAO	UT36FH NAO	UT42FH NAO	UT48FH NAO	UT60FH NAO		
	Mid Static		UM12FH N10	UM18FH N10	UM24FH N20	UM30FH N20	UM36FH N30	UM42FH N30	UM48FH N30			
	Ceiling Concealed Duct											
	Low Static		UL12FH N50	UL18FH N30								
	Ceiling Suspended			UV18FH N10	UV24FH N20	UV30FH N20	UV36FH N20	UV42FH N20				
ODU	1Ø, 3Ø	UUA1 UL0	UUB1 U20	UUC1 U40	UUD1 U30 / UUD3 U30							
Standard Inverter (R32)	Ceiling Mounted Cassette	CT09F NR0	CT12F NR0	CT18F NQ0	CT24F NB0	UT30F NB0	UT36F NAO	UT42F NAO	UT48F NAO	UT60F NAO		
	Round Cassette					UT36F NY0	UT48F NY0					
	Mid Static			CM18F N10	CM24F N10	UM30F N10	UM36F N20	UM42F N20	UM48F N30	UM60F N30		
	Ceiling Concealed Duct											
	Low Static	CL09F N50	CL12F N50	CL18F N60	CL24F N30							
	Ceiling Suspended			UV18F N10	UV24F N10	UV30F N10	UV36F N20	UV42F N20	UV48F N20	UV60F N20		
	Wall Mounted	MJ09PCNSJ	MJ12PCNSJ	MJ18PCNSK	MJ24PCNSK	US30F NR0	US36F NR0					
	Console	UQ09 NAO	UQ12 NAO	UQ18 NAO								
ODU	1Ø, 3Ø	UUA1 UL0	UUB1 U20	UUC1 U40	UUD1 U30 / UUD3 U30							

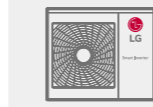
## COMPACT INVERTER (R32) / STANDARD INVERTER (R410A)

kBTu/h		9	12	18	24	30	36	42	48	60	70	85
kW		2.5	3.4	5.0	6.8	8.0	9.5	12.0	13.4	14.6	20.0	25.0
COMPACT INVERTER (R32)	Ceiling Mounted Cassette			CT18F NQ0	CT24F NB0	UT30F NB0	UT36F NAO					
	Mid Static			CM18F N10	CM24F N10	UM30F N10	UM36F N20					
	Ceiling Concealed Duct											
	Low Static			CL18F N60	CL24F N30							
	Ceiling Suspended			UV18F N10	UV24F N10	UV30F N10	UV36F N20					
	Wall Mounted					US30F NR0	US36F NR0					
ODU	1Ø	UUA1 UL0	UUB1 U20	UUC1 U40								
STANDARD INVERTER (R410A)	Ceiling Concealed Duct (High Static)									UB70 N94	UB85 N94	
	Floor Standing									UP48 NT2		
	1Ø									UU48W U32		
ODU	3Ø							UU49W U32	UU70W U34	UU85W U74		

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LINE UP

# SINGLE SPLIT



## FEATURE OVERVIEW

Category	H-Inverter (R32)									
	kBtu/h	9	12	18	24	30	36	42	48	60
	kW	2.5	3.4	5.0	6.8	8.0	9.5	12.0	13.4	14.6
<b>Supreme Energy Efficiency</b>	BLDC Comp & Fan Motor	•	•	•	•	•	•	•	•	•
	Eurovent Certi.	•	•	•	•	•	•	•	•	•
	High Level SEER / SCOP	•	•	•	•	•	•	•	•	•
	Variable Voltage Control	•	•	•	•	•	•	•	•	•
	Wide Louver Fin	•	•	•	•	•	•	•	•	•
	Optimised Heat Exchanger Path			•	•	•	•	•	•	•
	Power Saving Start up	•	•	•	•	•	•	•	•	•
	Peak Current Control			•	•	•	•	•	•	•
	Mode Lock	•*	•*	•	•	•	•	•	•	•
	Standby Mode	•	•	•	•	•	•	•	•	•
<b>Comfort Environment</b>	Comfort Cooling with Humidity sensor**			•	•	•	•	•	•	•
	Night Silent Operation			•	•	•	•	•	•	•
	Continuous Cooling Operation	•	•	•	•	•	•	•	•	•
<b>High Performance &amp; Reliability</b>	Quick & Reliable Operation	•	•	•	•	•	•	•	•	•
	R1 Compressor					•	•	•	•	•
	Corrosion Resistance Black Fin	•	•	•	•	•	•	•	•	•
	Long Pipe Installation	•	•	•	•	•	•	•	•	•
<b>Convenient Control System</b>	LG ThinQ***	•	•	•	•	•	•	•	•	•
	Easy Control (PI-485 Connection)	•	•	•	•	•	•	•	•	•
	1 Point External Input****	•	•	•	•	•	•	•	•	•
	Forced Cooling Operation			•	•	•	•	•	•	•
	Mobile LG MV	•	•	•	•	•	•	•	•	•
	Weekly Program*****	•	•	•	•	•	•	•	•	•
<b>Enhanced Application</b>	Synchro function									
	Connection with AHU			•	•	•	•	•	•	•

\* With Controller PREMTB001 / PREMTBB01 / PREMTB100 / PREMTBB10  
 \*\* Available only for Ceiling Mounted cassette (840 x 840), Ceiling Suspended, Console models.  
 \*\*\* Available with LG Wi-Fi modem (PWFMD200) and it should be connected to the indoor unit.  
 \*\*\*\* Available except for Wall Mounted Unit.  
 \*\*\*\*\* Weekly program is available with wired remote Controller.

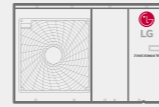
Category	Standard Inverter (R32)									Compact Inverter (R32)				
	kBtu/h	9	12	18	24	30	36	42	48	60	18	24	30	36
	kW	2.5	3.4	5.0	6.8	8.0	9.5	12.0	13.4	14.6	5.0	6.8	8.0	9.5
<b>Supreme Energy Efficiency</b>	BLDC Comp & Fan Motor	•	•	•	•	•	•	•	•	•	•	•	•	•
	Eurovent Certi.	•	•	•	•	•	•	•	•	•	•	•	•	•
	High Level SEER / SCOP	•	•	•	•	•	•	•	•	•	•	•	•	•
	Variable Voltage Control	•	•	•	•	•	•	•	•	•	•	•	•	•
	Wide Louver Fin	•	•	•	•	•	•	•	•	•	•	•	•	•
	Optimised Heat Exchanger Path				•	•	•	•	•	•	•		•	•
	Power Saving Start up	•	•	•	•	•	•	•	•	•	•	•	•	•
	Peak Current Control				•	•	•	•	•	•	•		•	•
	Mode Lock	•*	•*	•	•	•	•	•	•	•	•	•*	•	•
	Standby Mode	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Comfort Environment</b>	Comfort Cooling with Humidity sensor**	•	•	•	•	•	•	•	•	•	•	•	•	•
	Night Silent Operation			•	•	•	•	•	•	•		•	•	•
	Continuous Cooling Operation	•	•	•	•	•	•	•	•	•				
<b>High Performance &amp; Reliability</b>	Quick & Reliable Operation	•	•	•	•	•	•	•	•	•	•	•	•	•
	R1 Compressor						•	•	•	•				
	Corrosion Resistance Black Fin	•	•	•	•	•	•	•	•	•	•	•	•	•
	Long Pipe Installation	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Convenient Control System</b>	LG ThinQ***	•	•	•	•	•	•	•	•	•	•	•	•	•
	Easy Control (PI-485 Connection)	•	•	•	•	•	•	•	•	•	•	•	•	•
	1 Point External Input****	•	•	•	•	•	•	•	•	•	•	•	•	•
	Forced Cooling Operation				•	•	•	•	•	•		•	•	
	Mobile LG MV	•	•	•	•	•	•	•	•	•	•	•	•	•
	Weekly Program*****	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Enhanced Application</b>	Synchro Function						•	•	•	•				
	Connection with AHU				•	•	•	•	•	•		•	•	•

\* With Controller PREMTB001 / PREMTBB01 / PREMTB100 / PREMTBB10  
 \*\* Available only for Ceiling Mounted cassette (840 x 840), Ceiling Suspended, Console models.  
 \*\*\* Available with LG Wi-Fi modem (PWFMD200) and it should be connected to the indoor unit.  
 \*\*\*\* Available except for Wall Mounted Unit.  
 \*\*\*\*\* Weekly program is available with wired remote Controller.

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LINE UP

# AWHP (THERMA V™)



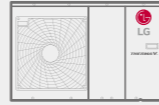
## LINE UP OVERVIEW

Type	Refrigerant	Line-up	Capacity(kW)	5	7
Monobloc	R32	R32 Monobloc	1Ø 230V	HM051M U43	HM071M U43
			3Ø 400V		
	Silent	R32 Silent Monobloc	1Ø 230V		
Hydrosplit	R32	R32 Split	1Ø 230V		
			3Ø 400V		
Hydro Box	R32	R32 Split	1Ø 230V	HN0916M NK4	HN0916M NK4
			3Ø 400V	HU051MR U44	HU071MR U44
	IWT	R32 IWT	1Ø 230V	HN0916T NB1	HN0916T NB1
			3Ø 400V	HU051MR U44	HU071MR U44
Split	R410A	R410A Split	1Ø 230V		
			3Ø 400V		
	IWT	R410A IWT	1Ø 230V		
			3Ø 400V		
Floor Standing	R410A + R134a	High Temperature	1Ø 230V		

9	12	14	16
HM091M U43	HM121M U33	HM141M U33	HM161M U33
	HM123M U33	HM143M U33	HM163M U33
HM091MRS U33			
	HN1600MB NK0	HN1600MB NK0	HN1600MB NK0
	HU121MRB U30	HN1600MB NK0	HU161MRB U30
	HN1600MB NK0	HN1600MB NK0	HN1600MB NK0
	HU123MRB U30	HU143MRB U30	HU163MRB U30
HN0916M NK4			
HU091MR U44			
HN0916T NB1			
HU091MR U44			
	HN1616 NK3	HN1616 NK3	HN1616 NK3
	HU121 U33	HU141 U33	HU161 U33
	HN1639 NK3	HN1639 NK3	HN1639 NK3
	HU123 U33	HU143 U33	HU163 U33
HN1616T NB0	HN1616T NB0	HN1616T NB0	HN1616T NB0
HU091 U43	HU121 U33	HU141 U33	HU161 U33
	HN1616T NB0	HN1616T NB0	HN1616T NB0
	HU123 U33	HU143 U33	HU163 U33
			HN1610H NK3
			HU161HA U33

※ Products which contain R410A (GWP 2087.5) are pre charged over 1.8kg- and t-CO<sub>2</sub> eq is over 3.76-.  
 Products which contain R32 (GWP 675) are pre charged over 1.4kg- and t-CO<sub>2</sub> eq is over 0.95-.  
 (The values are changed by the capacities of products)

BRAND

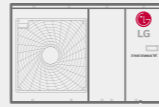


## ACCESSORIES PROVIDED BY LG

Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Sensors	Room Temperature Sensor	PQRSTA0	All except for R410A IWT	Room Temperature Based Control	To detect room air temperature for room temperature based control	• Max wire length : 15m
	2 <sup>nd</sup> Circuit Thermistor	PRSTAT5K10	All except for R410A IWT and High temp.	2 <sup>nd</sup> Circuit	To detect 2 <sup>nd</sup> circuit temperature when using 2 <sup>nd</sup> circuit function	• 5kΩ thermistor, 10m
	Domestic Hot Water Sensor	PHRSTA0	All except for IWT and High temp. models	Domestic Hot Water Heating	To detect DHW tank temperature	• Included in PHLTA kit
Valves	3Way Valve	OSHA-3V	All except for IWT models	Domestic Hot Water Heating	To divert water flow between space heating and DHW heating	• Size : DN 20 G 1" connection, male threaded
	Thermostatic Mixing Valve	OSHA-MV	Regardless of model	Domestic Hot Water Supply	To blend hot water with cold water for ensuring constant, safe shower and bath outlet temperature, preventing scalding.	• Size : 3/4" DN20 male threaded
		OSHA-MV1				• Size : 1" DN25 male threaded
Tanks	Domestic Hot Water Tank (Single Coil)	OSHW-200F OSHW-300F OSHW-500F	All except for IWT models	Domestic Hot Water Heating	To generate and store domestic hot water	• Storage volume : 200L, 300L, 500L • Type : Internal single coil • Material : Stainless steel • Capacity of booster heater : 2.4kW
	Domestic Hot Water Tank (Double Coil)	OSHW-300FD	All except for IWT and High temp. models			• Storage volume : 300L • Type : Internal double coil • Material : Stainless steel • Capacity of booster heater : 2.4kW
Installation Kits	Domestic Hot Water Tank Kit	PHLTA (1Ø, Split)	All except for IWT and High temp. models	Domestic Hot Water Heating	To operate with DHW tank	• Parts included : DHW tank sensor (Thermistor), Circuit breaker, Relay
		PHLTC (3Ø, Split)				• Parts included : DHW tank sensor (Thermistor), Circuit breaker, Relay, Multi harness
		PHLTB (Monobloc)				
	Solar Thermal Kit	PHLLA	All except for IWT, Hydrosplit and High temp. models	Solar Thermal Heat Utilization	To operate with solar thermal system	• Length of thermistor : 12m • Size of tube connector (W x H x D) : 110 x 55 x 22

Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature	
Installation Kits	Electric Back up heater (for Monobloc)	HA031M E1 HA061M E1 HA063M E1	R32 Monobloc and R32 Silent Monobloc (HA063M E1 is not applicable for R32 Silent Monobloc)	Capacity back up & Emergency Operation	To supplement insufficient capacity	<ul style="list-style-type: none"> <li>• Heater capacity : 3kW</li> <li>• Number of heating coil : 1EA (3.0kW)</li> <li>• Size (W x H x D) : 210 x 607 x 217</li> <li>• Power : 220 - 240V, 1Ø</li> <li>• Heater capacity : 6kW</li> <li>• Number of heating coil : 2EA (3.0 + 3.0kW)</li> <li>• Size (W x H x D) : 210 x 607 x 217</li> <li>• Power : 220 - 240V, 1Ø</li> <li>• Heater capacity : 6kW</li> <li>• Number of heating coil : 3EA (2.0 + 2.0 + 2.0kW)</li> <li>• Size (W x H x D) : 210 x 607 x 217</li> <li>• Power : 380 - 415V, 3Ø</li> </ul>	
	Vessel	Buffer tank for space heating	OSHB-40KT	R32 IWT	-	To provide the buffer volume of water to the heating circuit	• Volume : 40L • Size (W x H x D) : 518 x 560 x 175
		Expansion vessel for DHW	OSHE-12KT	R32 IWT	-	To absorb the volume changes by temperature of water for the DHW circuit	• Volume : 8L • Connection : 3/4" • Max. pressure : 10 bar • Size (W x H x D) : 416 x 238 x 502
ETC	Extension wire for wire remote controller	PZCWRC1	All except for R410A IWT	-	To extend wire between wired remote controller and indoor unit	• Length : 10m	
	Extension cable for Wi-Fi Modem	PWYREW000	All except for R410A IWT	Wi-Fi Control via LG ThinQ	To extend wire between Wi-Fi modem and indoor unit	• Length : 10m	
	2-Remo Control Wire	PZCWRC2	All except for R410A IWT model	2-Remote Control	To connect two remote controller on the one indoor unit	• Length : 0.25m	
	Drain pan (for Split IDU)	PHDPB	R32 Split, R410A Split	R32 Hydrosplit	Cooling Operation	To collect condensed water in indoor unit when cooling operation	-
PHDPC							
Cover plate (for Split IDU)	PDC-HK10		R32 Hydrosplit, R32 Split, R32 IWT, R410A Split	-	To fill the blank space of the indoor unit front panel when the remote controller is relocated indoors.	-	

# AWHP (THERMA V™)



## ACCESSORIES PROVIDED BY LG

Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
<b>Remote Controller</b> Wired Remote Controller	PREMTW101		All except for R410A IWT model	2-Remote Control	To control AWHP using two remote controller (Additional remote controller)	<ul style="list-style-type: none"> <li>New modern design 4.3 inch color LCD display.</li> <li>Information displayed with simple graphic, icon &amp; text.</li> <li>Built-in temperature sensor</li> <li>Size (W x H x D) : 120 x 120 x 16</li> <li>Extension cable (PZCWRC1, 10m) and 2-remo cable (PZCWRC2, 0.25m) are included.</li> </ul>
AC Ez Touch	PACEZA000					<ul style="list-style-type: none"> <li>5 inch color display</li> <li>User-friendly control with iconographic interface (Touch screen)</li> <li>Max 64 unit control</li> <li>Total 200 schedule events (Weekly / Monthly / Yearly / Exception day)</li> <li>Operation history</li> <li>Remote controller lock (All, Temp, Mode)</li> <li>PC access supported (IPv6 supported)</li> <li>DI 1EA (Emergency stop only)</li> <li>Size (W x H x D) : 137 x 121 x 25</li> </ul>
<b>Central Controller</b> AC Smart 5	PAC5SA000		All except for R410A IWT model	Centralized Control	To control AWHP using LG central controller	<ul style="list-style-type: none"> <li>10 inch type color display</li> <li>User-friendly control with iconographic interface (Touch screen)</li> <li>Max 128 unit control</li> <li>Total 100 schedule events (Weekly / Monthly / Yearly / Exception day)</li> <li>History / Operation trend</li> <li>Interlock with 3<sup>rd</sup> party equipment (ACS IO, ACU IO Module is needed)</li> <li>Error alarm by e-mail</li> <li>Remote controller lock (All, Temp, Mode)</li> <li>Map view (Visual navigation)</li> <li>Web access supported with HTML5 (PC, Smartphone, Tablet)</li> <li>DI 2EA, DO 2EA</li> <li>BACnet IP / Modbus TCP protocol support</li> <li>Size (W x H x D) : 253.2 x 167.7 x 28.9</li> </ul>
ACP 5	PACP5A000					<ul style="list-style-type: none"> <li>Web access controller</li> <li>Max 256 unit control</li> <li>Total 100 schedule events (Weekly / Monthly / Yearly / Exception day)</li> <li>History / Operation Trend</li> <li>Interlock with 3<sup>rd</sup> party equipment (ACS IO, ACU IO Module is needed)</li> <li>Error alarm by e-mail</li> <li>Remote controller lock (All, Temp, Mode)</li> <li>Map view (Visual navigation)</li> <li>DI 10EA, DO 4EA</li> <li>BACnet IP / Modbus TCP protocol support</li> <li>Size (W x H x D) : 270 x 155 x 65</li> </ul>
<b>Gateway</b> ACP Lonworks	PLNWKB000		All except for R410A IWT model	Centralized Control	To link with AWHP and other existing building control system	<ul style="list-style-type: none"> <li>Web access controller</li> <li>Max 64 unit control</li> <li>ACP function included</li> <li>Lonworks protocol support</li> </ul>

Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Modbus RTU Gateway	PMBUSB00A		All except for R410A IWT model		To communicate and control through the central controller (Providing Modbus RTU connection between AWHP and BMS)	<ul style="list-style-type: none"> <li>Modbus RTU slave (RS485) / 9,600 bps</li> <li>Size (W x H x D) : 53.6 x 89.7 x 60.7</li> <li>Max 16 IDUs with single module / Max 64 IDUs with 4 modules</li> <li>Power : DC 12V</li> </ul>
<b>Gateway</b> PI485 Gateway	PMNFP14A1 <sup>1)</sup>		All except for R410A IWT model	Centralized Control	To communicate and control through the central controller (Converting LG protocol to RS485 protocol)	<ul style="list-style-type: none"> <li>1 for each outdoor unit</li> <li>Power : Supplied by outdoor unit</li> </ul>
PI485 Gateway	PP485B00K <sup>2)</sup>		R410A IWT		To communicate between outdoor unit and IWT type indoor unit	<ul style="list-style-type: none"> <li>1 for each outdoor unit</li> <li>Power : Supplied by outdoor unit</li> </ul>
<b>Dry Contact</b> Simple Dry Contact	PDRYCB000		All except for R410A IWT model	-	To connect between the AWHP and external devices to control various functions	<ul style="list-style-type: none"> <li>1 Set per 1 unit</li> <li>1 Input contact for turning On/Off</li> <li>Input power : 220 ~ 240V</li> <li>2 Output contacts</li> <li>Operation status - Error status</li> </ul>
LG Wi-Fi Modem	PWFMDD200		All except for R410A IWT model	Wi-Fi Control via LG ThinQ	To control AWHP via smartphone	<ul style="list-style-type: none"> <li>Basic control function</li> <li>On/Off, Operation mode, Set temp</li> <li>DHW heating and Set temp</li> <li>Weekly On/Off schedule</li> <li>Error status check</li> <li>Frequency : 2.4GHz</li> <li>IEEE 802.11b/g/n supported</li> </ul>
Meter Interface	PENKTH000		All except for R410A IWT model	Energy Monitoring	To measure production / Consumption power	<ul style="list-style-type: none"> <li>Energy meter interface to monitor Electricity and Heat energy</li> <li>Max 3 watt - hour meter</li> <li>Max 1 heat meter</li> <li>Pulse width : 40ms ~ 100ms</li> <li>Modbus RTU comm. with THERMA V</li> <li>2 wire RS485 / 9600bps</li> <li>Power : DC 12V</li> <li>Size (W x H x D) : 54 x 90 x 61</li> </ul>
<b>ETC</b> 2 Zone Valve Controller	PZNVVB200		All except for R410A IWT model	Zone Valve Control	To control individual zone valves with room temperature sensor or room thermostat	<ul style="list-style-type: none"> <li>Individual temperature setting possible. (To be set through wired remote control in room temperature input mode)</li> <li>Room temperature detection (AI : 2 ports)</li> <li>3<sup>rd</sup> party thermostat interlock input. (DI : 2 port)</li> <li>Can read one DI or AI for each zone.</li> <li>Maximum number of connections : Max 4EA (Expandable up to 8-zone)</li> <li>Power : DC12V for Module, AC24V for valve</li> <li>Size (W x H x D) : 54 x 90 x 61</li> </ul>

Note  
 1. PI485 Gateway (PMNFP14A1) should be installed on outdoor unit to use Central controller.  
 2. PI485 Gateway (for R410A IWT type, PP485B00K) is required for communication between outdoor unit and indoor unit. (Install at outdoor unit)

LINE UP

# INVERTER SCROLL CHILLER



## INVERTER SCROLL CHILLER LINE-UP

Capacity (kW)	65	74	114	130	148	171	195	222
~18 Heat Pump Model (ACHH *** LBAB)								
	65	74	114	130	148	171	195	222
	70.3	82	120	140.6	164	180	210.9	246
Capacity (Kw)	Up to 2,220 kW (10 CHILLERS) by ACP (Advanced Control Platform)							
Range of Unit Control	Up to 1,110 kW (5 CHILLERS) by AC Smart Controller							
	Up to 1,110 kW (5 CHILLERS) by HMI Touch controller							

\*Central controller ACP, AC Smart controller are option.

Max. 10 chillers can be controlled by 1 central controller up to 2,220kW.

※ Products which contain R410A (GWP 2087.5) are pre charged over 14kg- and t-CO<sub>2</sub> eq is over 2923-. (The values are changed by the capacities of products)

LINE UP

# APPLIED (FCU)



## LINE-UP OF FCU & CENTRAL CONTROLLER

Capacity (kW)* (kBTu/h)	1.8 (6k)	2.7 (9k)	3.2 (11k)	4.1 (14k)	6.0 (20k)	7.2 (24k)	9.0 (30k)	10.5 (36k)	13.0 (44k)
4 Way Cassette	•	•	•	•	•	•	•	•	•
Body Size (WxHxD,mm)	570x214x570			570x 256x 570		840x204x840		840x246x840	
Front Panel	PT-UQC		PT-QCHW0 (U-style)		PT-UMC(1)				

Capacity (kW)* (kBTu/h)	1.5 (4k)	1.8 (6k)	2.5 (9k)	3.2 (11k)	3.9 (13k)	5.5 (17k)	6.6 (22k)
Low ESP Duct	•	•	•	•	•	•	•
Body Size (WxHxD,mm)	700x190x700		900x190x700		1100x190x700		

※ All lineups are for 2 pipes type only.  
\* Based on Cooling Capacity. Cooling Capacity testing condition : Inlet/Outlet Water Temperature 7°C / 12°C, Indoor Air Temperature 27°CDB / 19°CWB

LG Central Controller	AC Ez	AC Ez Touch	AC Smart 5 <sup>1)</sup>	ACP 5 <sup>1)</sup>	ACP Lonworks	AC Manager 5 <sup>2)</sup>
	PQCSZ250S0	PACEZA000	PACSSA000	PACP5A000	PLNWK000	PACM5A000
Max. Connectable No.	IDUs (A/C, FCU)	16	32	64	128	64
	A/C + ERV	32	64	128	256	64
	AHU	-	-	16	16	16
	Chiller	-	-	5 Optional <sup>3)</sup>	10 Optional <sup>3)</sup>	-

1) Without additional device, ACP 5 and AC Smart 5 provide BACnet IP and Modbus TCP interface for BMS  
2) ACP 5 or AC Smart 5 is required 3) Except for some features (user mode, additional function, etc.)

LINE UP

# AIR PURIFIER



## AIR PURIFIER

Applicable area (CA, m <sup>2</sup> )	91	58	-
Exterior			
Model Name	AS95GDWV0	AS60GDWV0	PuriCare 360 Filter
Type	Wearable Air Purifier		UV Case
Model Name	AP300AWFA		PWKAUW01

## ACCESSORIES & PARTS FOR WATER PIPES CONNECTION

Remote Controller	Premium PREMTA000(A/B)	Standard III <sup>1)</sup> PREMTB100 (White) PREMTBB10 (Black)	Standard II PREMTB001 (White) PREMTBB01 (Black)	Simple PQRCVCLOQ(W) PQRCHCA0Q(W) (for Hotel)
Dry Contact	PDRYCB000 (Simple)	PDRYCB400 (2 points)	PDRYCB320 (for Thermostat)	
ETC.	Remote Temperature Sensor PQRSTA0	Wi-Fi Modem PWFMD200		
Parts for Water Pipes Connection (Purchase on Site)	Rubber Packing (4EA, OD23 xID15 x t3.2)	Flexible Pipe (2EA, FPF ¼", 350mm/500mm Ordered Specification)		
(installer Purchase)	Nipple (2EA, MPT ¼", MPF ¼")	2Way Valve (On/Off, 2-wires or 3wires)	Valve insulation Material (1EA)	
	Ball Valve (2EA, FPT ¼", 20A)	Nipple (2EA, MPT ¼", MPF ¼")		
	Strainer (1EA, FPF ¼", #30)	Water Pipe (2EA, 20A, Copper or Stainless Tube)		






1) It could not be operated some functions. 2) To be released in the 1st quarter of 2020 3) To be released in the 1st half of 2020  
4) The dry contact for Modbus is built-in to the FCU as default. 5) Included with installation parts


LINE UP  
**LG ESS SOLUTION**



**PCS (POWER CONDITIONING SYSTEM)**





Capacity (kW)	50	250	250 (UL Type)
Max.Efficiency(%)	95 (including Tr.)	98.4	98.4
Exterior			
Model Name	EF50T332111	EB25T452131	P250KH53231.AUS1N

Capacity (kW)	1,000	1,000 (ULType)	2,000	2,000	
Max.Efficiency(%)	98.6	98.6	98.7	98.4	98.5
Exterior					
Model Name	EF01M452131	EF01M412131	EF01M532111	P002MH45112	EF02M41N111

Capacity (kW)	100
Max.Efficiency(%)	97.5
Exterior	
Model Name	EF50T332111

- Commercial & Industry Application  
- Possible for applying to commercial building & power plants and using as Peak Shifting, Renewable Integration, Frequency Regulation

**LI-ION BATTERY**




Capacity (Ah)	145	218	290				
Energy (kWh)	7.4	11.2	14.9				
High Energy Module							
Model Name	M48145P5B	M48218P5B	M48290P5B				
Capacity (Ah)	145	218	290	145	218	290	290
Energy (kWh)	104.3	156.4	208.5	126.6	189.9	253.2	357.5
Rated Voltage(V)	719			873			1233
Voltage Range(V)	588-823			714-1,000			1,008-1,411
Exterior Rack							
Model Name (Battery Rack)	R800	R1000	R1500				
	EF01M452131	EF01M412131	EF01M532111	EF01M532111	EF01M532111	EF01M532111	EF01M532111

- Commercial & Industry Application

**THREE-PHASE ESS HOME SERIES**

	PCS <sup>1)</sup> (5kW)	Battery (6.4kWh)
Battery Expansion	6.4kWh x 2	6.4kWh x 2
Exterior		
Model Name	Home 5	HB 6.4

- Premium three-phase ESS solution for European residential market  
1) Power Conditioning System, 2) Maximum Power Point Tracking

	PCS <sup>1)</sup> (8kW)	PCS (10kW)	Battery (7kWh & 9.8kWh)
Battery Expansion	combination with HB 7H and HB 10H	combination with HB 7H and HB 10H	combination with HB 7H and HB 10H
Exterior			
Model Name	Home 8	Home 10	HB 7H & 10H

- Premium three-phase ESS solution for European residential market  
1) Power Conditioning System, 2) Maximum Power Point Tracking

LINE UP  
**ERV**


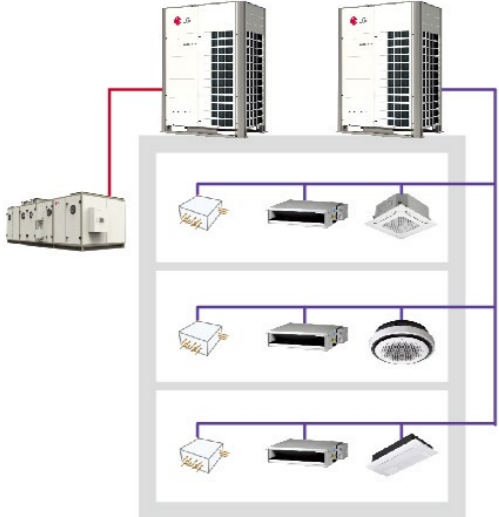
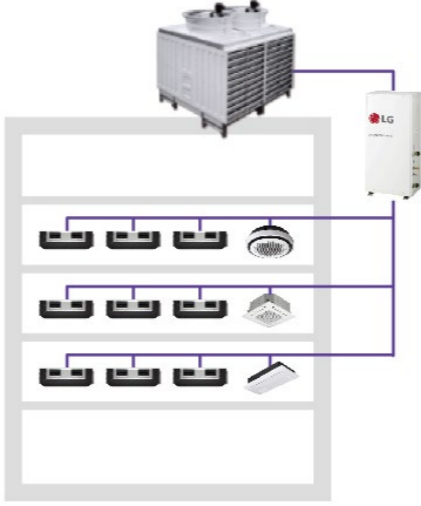



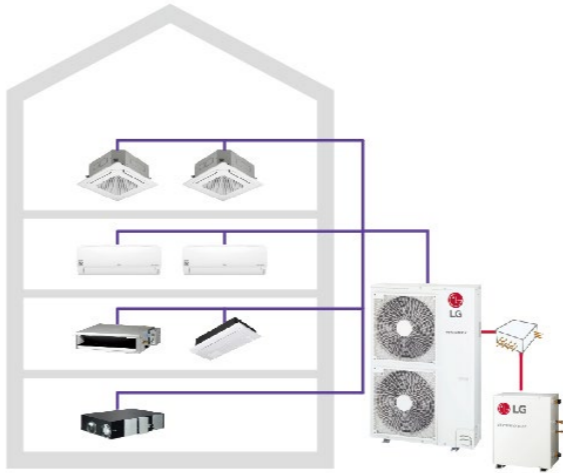
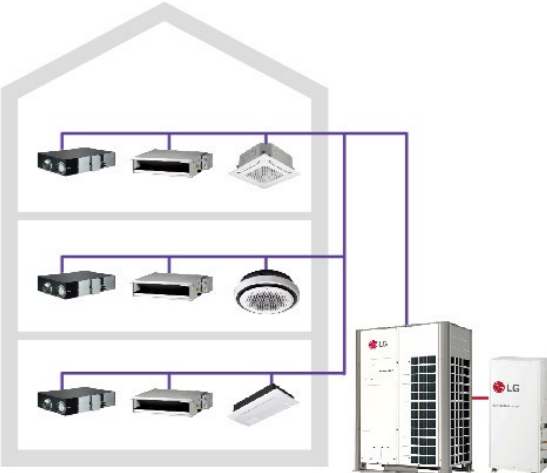
**ERV LINE-UP**

Model			
ERV			
Unit	LZ-H025GBA4	LZ-H035GBA5	LZ-H050GBA5
ERV			
Unit	LZ-H080GBA5	LZ-H100GBA5	LZ-H150GBA5 LZ-H200GBA5
ERV WITH DX COIL			
Unit	LZ-H050GXH4 LZ-H080GXH4	LZ-H100GXH4 LZ-H050GXN4	LZ-H080GXN4 LZ-H100GXN4

# LG HVAC SOLUTION OVERVIEW




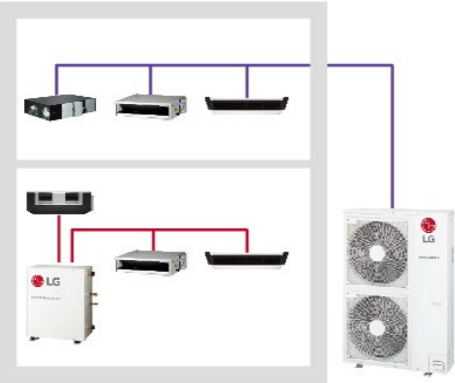
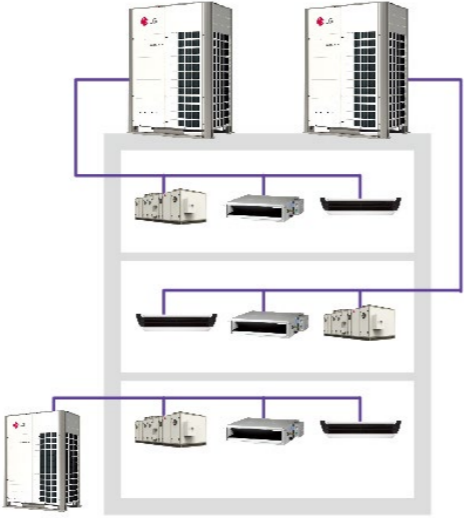
Segment	Office	
Target Vertical Segment		
Needs	Low / Middle Rise	High Rise / High Volume
	<b>Owner :</b> - Cost Saving <b>Consultant :</b> - Reliable Operation - Easy To Design - Save Installation Space <b>Building Manager :</b> - Easy Monitoring And Zone Control - Easy Maintenance	<b>Owner :</b> - Cost Saving <b>Consultant :</b> - Reliable Operation <b>Building Manager :</b> - Easy Monitoring And Zone Control - Easy Maintenance
Approach		
	<ul style="list-style-type: none"> <li>- High efficiency by Dual Sensing Control</li> <li>- Human detect sensor for saving electricity consumption</li> <li>- Compressor back up for emergency operation</li> <li>- Large capacity outdoor unit</li> <li>- Long pipe connection (225m long piping length, 1,000m total piping length)</li> <li>- Scheduled Operation &amp; individual control for each zone</li> <li>- Fault Detection and Diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>- High efficiency by partial operation</li> <li>- Human detect sensor for saving electricity consumption</li> <li>- Compressor back up for emergency operation</li> <li>- Less water consumption &amp; power consumption by Variable Water Control System</li> <li>- Mobile Monitoring and Control</li> <li>- Fault Detection and Diagnosis</li> </ul>
Benefit	<ul style="list-style-type: none"> <li>- Operation Cost Saving By High Efficiency</li> <li>- Cost Saving By Wider Space Usage</li> <li>- Flexible Design From Long Pipe Connection</li> <li>- Convenient Control &amp; Monitoring</li> <li>- Maintenance Cost &amp; Time Saving</li> </ul>	<ul style="list-style-type: none"> <li>- Operation Cost Saving By High Efficiency</li> <li>- Convenient Control &amp; Monitoring</li> <li>- Maintenance Cost &amp; Time Saving</li> </ul>




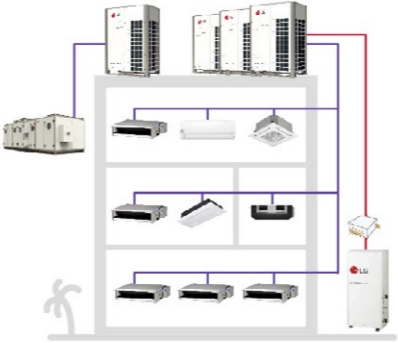
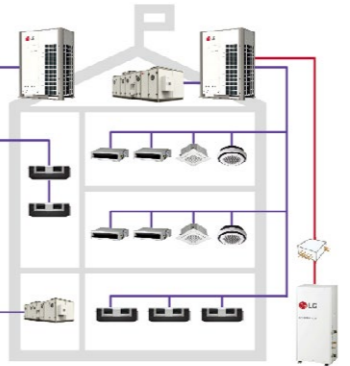
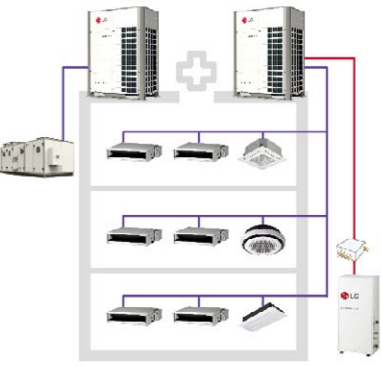
Segment	Residential	
Target Vertical Segment		
Needs	Single Family House	Multi Family House
	<b>Owner :</b> - Good Looking Interior - Pleasant Indoor Environment - Low Operation Cost <b>Consultant :</b> - Good Looking Interior - Low Operation Cost	<b>Owner :</b> - Comfort & Healthy Environment - Low Operation Cost <b>Consultant :</b> - Easy To Design - Easy Billing To Each Tenant
Approach		
	<ul style="list-style-type: none"> <li>- Premium &amp; luxurious design indoor unit</li> <li>- Low noise mode for both indoor and outdoor unit</li> <li>- High efficiency by dual sensing SLC</li> <li>- Ventilation system</li> <li>- Indoor Air purification &amp; ionizer</li> </ul>	<ul style="list-style-type: none"> <li>- Air Purification, Ventilation (AHU)</li> <li>- Low noise mode for both indoor and outdoor unit</li> <li>- High efficiency by Dual Sensing Control</li> <li>- Long pipe connection (225m long piping length, 1,000m total piping length)</li> <li>- Power distribution indicator</li> </ul>
Benefit	<ul style="list-style-type: none"> <li>- Enhance Interior Design</li> <li>- Good Indoor Air Quality</li> <li>- Operation Cost Saving By High Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>- High Indoor Air Quality From Fresh Air &amp; Air Purification</li> <li>- Low Noise For Comfortable Indoor Environment</li> <li>- Operation Cost Saving By High Efficiency</li> <li>- Flexible Design From Long Pipe Connection</li> <li>- Easy Billing By Separate Tenant Report</li> </ul>



# LG HVAC SOLUTION OVERVIEW


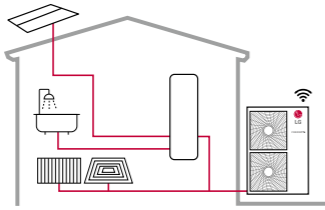
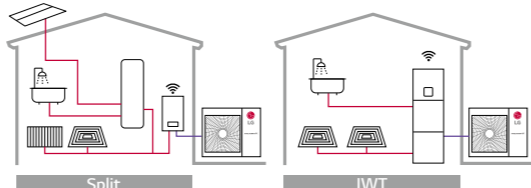




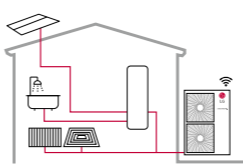
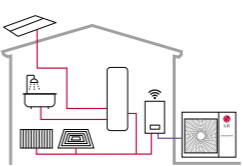
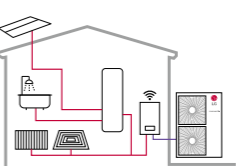
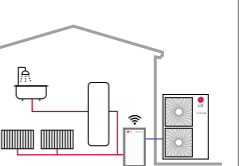
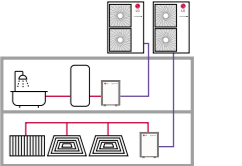
Segment	Retail	
Target Vertical Segment		
Needs	Small	Large
	<b>Owner :</b> - Cost saving - Maximized available space <b>Installer :</b> - Easy installation - Product in case no space for outdoor unit - Easy service	<b>Owner :</b> - Cost saving <b>Consultant :</b> - Easy to design - Easy billing to each tenant <b>Building manager :</b> - Easy monitoring and control - Easy maintenance
Approach		
	<ul style="list-style-type: none"> <li>- High efficiency by dual sensing SLC</li> <li>- Compact size of outdoor unit</li> <li>- Piping flexibility &amp; light weight</li> <li>- module type outdoor unit</li> <li>- Fault Detection and Diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>- High efficiency by Dual Sensing Control</li> <li>- Human detect sensor for empty space</li> <li>- Large capacity outdoor unit &amp; EEV kit for AHU</li> <li>- Long pipe connection (225m long piping length, 1,000m total piping length)</li> <li>- Power distribution indicator</li> <li>- Scheduled Operation &amp; individual control for each zone</li> <li>- Fault Detection and Diagnosis</li> </ul>
Benefit	<ul style="list-style-type: none"> <li>- Operation cost saving by high efficiency</li> <li>- Save installation space from compact outdoor unit</li> <li>- Installation cost &amp; time saving</li> <li>- Maintenance cost &amp; time saving</li> </ul>	<ul style="list-style-type: none"> <li>- Operation cost saving by high efficiency</li> <li>- Installation space saving from large capacity unit</li> <li>- Flexible design from long pipe connection &amp; EEV kit</li> <li>- Easy billing by separate tenant report</li> <li>- Convenient control &amp; monitoring</li> <li>- Maintenance cost &amp; time saving</li> </ul>

Hotel	Education	Hospital / Clinic (Healthcare facility)
		
<b>Owner :</b> - Cost saving - Pleasant & Safe indoor environment for guest <b>Consultant :</b> - Easy to design - Reliable operation <b>Building manager :</b> - Easy monitoring and control - Easy maintenance	<b>Investor :</b> - Cost saving - Pleasant environment for learning <b>Consultant :</b> - Flexible design for different area (Office / library / Lecture Hall etc.) - Reliable operation <b>Building Manager :</b> - Easy differentiated control for different zone - Simple, easy and automatic controls	<b>Investor :</b> - Cost saving - Comfortable environment for patient <b>Consultant :</b> - Clean air & contamination elimination - Hot water supply <b>Building Manager :</b> - Easy differentiated control for different zone - Simple, easy and automatic controls
		
<ul style="list-style-type: none"> <li>- High efficiency by Dual Sensing Control</li> <li>- Large capacity outdoor unit &amp; EEV kit for AHU</li> <li>- Long pipe connection (225m long piping length, 1,000m total piping length)</li> <li>- Compressor back up for emergency operation</li> <li>- Scheduled Operation &amp; individual control for each zone</li> <li>- Fault Detection and Diagnosis</li> <li>- Control solution based on check-in and occupancy</li> <li>- Refrigerant leak detection solution</li> </ul>	<ul style="list-style-type: none"> <li>- High efficiency by Dual Sensing Control</li> <li>- Air Purification, Ventilation (AHU)</li> <li>- Large capacity outdoor unit &amp; EEV kit for AHU</li> <li>- Long pipe connection (225m long piping length, 1,000m total piping length)</li> <li>- Various application for each space</li> <li>- Compressor back up for emergency operation</li> <li>- Scheduled Operation &amp; individual control for each zone</li> <li>- Fault Detection and Diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>- High efficiency by Dual Sensing Control</li> <li>- Control solution based on check-in and occupancy</li> <li>- Ventilation system for fresh air &amp; Air Purification</li> <li>- Hydrokit application for hot water producing</li> <li>- Scheduled Operation &amp; individual control for each zone</li> <li>- Fault Detection and Diagnosis</li> </ul>
<ul style="list-style-type: none"> <li>- Operation cost saving by high efficiency</li> <li>- Safe environment by leak detection solution</li> <li>- Flexible design from long pipe connection, EEV kit &amp; various application</li> <li>- Convenient control &amp; monitoring</li> <li>- Maintenance cost &amp; time saving</li> </ul>	<ul style="list-style-type: none"> <li>- Operation cost saving by high efficiency</li> <li>- Good air quality for studying</li> <li>- Flexible design from long pipe connection, EEV kit &amp; various application</li> <li>- Convenient control &amp; monitoring</li> <li>- Maintenance cost &amp; time saving</li> </ul>	<ul style="list-style-type: none"> <li>- Operation cost saving by high efficiency</li> <li>- Good air quality for recuperating</li> <li>- Flexible design with hydrokit and various application</li> <li>- Convenient control &amp; monitoring</li> <li>- Maintenance cost &amp; time saving</li> </ul>

# LG HEATING SOLUTION OVERVIEW


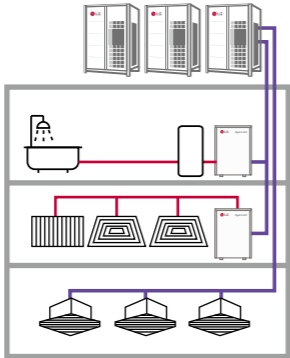




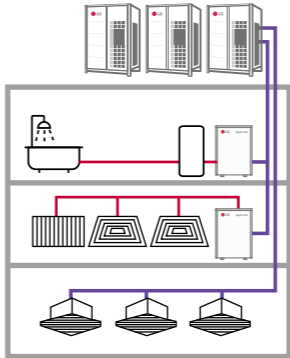
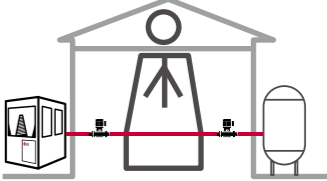
Segment		Residential		
Target Vertical Segment				
	New Houses			
Customer Needs	Designer & Installer	<ul style="list-style-type: none"> <li>- Don't want refrigerant piping work</li> <li>- Using existing facilities for conventional boiler</li> <li>- Saving installation and commissioning time</li> <li>- No indoor unit</li> </ul>	<p>&lt;Split&gt;</p> <ul style="list-style-type: none"> <li>- Using existing facilities for conventional boiler</li> <li>- Minimized wiring works</li> <li>- Eliminating the potential freezing risk at exposed water piping</li> </ul> <p>&lt;IWT&gt;</p> <ul style="list-style-type: none"> <li>- Saving installation and commissioning time</li> <li>- Where mechanical room is very limited</li> <li>- Easy to carry</li> <li>- Saving installation space for buffer tank and expansion tank</li> </ul>	
	End-User	<ul style="list-style-type: none"> <li>- Low operation cost</li> <li>- Reliable operation and long lifetime</li> <li>- Easy and intuitive controls</li> <li>- Remote control by smartphone</li> <li>- Quiet operation</li> <li>- Control integration between boiler and THERMA V</li> </ul>	<ul style="list-style-type: none"> <li>- Don't want to install refrigerant piping indoors</li> <li>- Eliminating the potential freezing risk at exposed water piping</li> </ul>	
Approach				
	<p>R32 Monobloc : 5 / 7 / 9kW (1Ø) R32 Silent Monobloc : 9kW (1Ø)</p> <ul style="list-style-type: none"> <li>- High energy efficiency</li> <li>- High corrosion resistance heat exchanger</li> <li>- New interface (standard III remote controller)</li> <li>- LG ThinQ Wi-Fi control solution</li> <li>- Low noise mode operation with schedule setting</li> <li>- Easy commissioning by PC tool (LG heating configurator)</li> <li>- Interlocking operation with 3rd party boiler</li> </ul>		<p>R32 Split : 5 / 7 / 9kW (1Ø) R32 IWT : 5 / 7 / 9kW (1Ø)</p>	
	<ul style="list-style-type: none"> <li>- All in one concept (no refrigerant piping work)</li> </ul>		<ul style="list-style-type: none"> <li>- No refrigerant piping work &lt;IWT only&gt;</li> <li>- All in one concept (integrated DHW tank with indoor unit)</li> <li>- Light weight and small size units</li> <li>- Sophisticated and harmonious exterior of indoor unit</li> <li>- Provides an option to integrate buffer tank and DHW expansion tank into indoor units</li> </ul>	
	<ul style="list-style-type: none"> <li>- Multiple Solution (heating, cooling and DHW supply)</li> <li>- Energy saving by utilizing renewable energy and high efficient equipment</li> <li>- Hybrid operation with existing facilities</li> <li>- Quick &amp; easy installation and commissioning</li> <li>- Economic support by incentive program</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out &lt;IWT only&gt;</li> <li>- Use of valuable machine room space for private purpose</li> </ul>	
Benefit	<ul style="list-style-type: none"> <li>- Simple replacement of existing boiler while maintaining the existing heating system</li> <li>- Saving mechanical room space</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out</li> <li>- Use of valuable machine room space for private purpose</li> </ul>	

Residential										
Target Vertical Segment										
	Renovation			Apartment & Collective Housing						
Customer Needs	Designer & Installer	<ul style="list-style-type: none"> <li>- Don't want refrigerant piping work</li> <li>- Using existing facilities for conventional boiler</li> <li>- Saving installation and commissioning time</li> <li>- No indoor unit</li> </ul>	<ul style="list-style-type: none"> <li>- Don't want refrigerant piping work</li> <li>- Using existing facilities for conventional boiler</li> <li>- Saving installation and commissioning time</li> <li>- Easy to carry</li> <li>- Minimized wiring works</li> </ul>	<ul style="list-style-type: none"> <li>- Using existing facilities for conventional boiler</li> <li>- Minimized wiring works</li> <li>- Eliminating the potential freezing risk at exposed water piping</li> </ul>	<ul style="list-style-type: none"> <li>- Solution for poorly insulated or old house</li> <li>- High DHW temperature to meet sanitary water regulation</li> <li>- Using existing facilities (old radiators)</li> </ul>					
	End-User	<ul style="list-style-type: none"> <li>- Low operation cost</li> <li>- Reliable operation and long lifetime</li> <li>- Easy and intuitive controls</li> <li>- Remote control by smartphone</li> <li>- Quiet operation</li> <li>- Control integration between boiler and THERMA V</li> </ul>	<ul style="list-style-type: none"> <li>- Don't want to install refrigerant piping indoors</li> <li>- Eliminating the potential freezing risk at exposed water piping</li> </ul>	<ul style="list-style-type: none"> <li>- Low operation cost</li> <li>- Reliable operation and long lifetime</li> <li>- Easy and intuitive controls</li> <li>- Remote control by smartphone</li> <li>- Quiet operation</li> </ul>	<ul style="list-style-type: none"> <li>- Flexible design and application</li> <li>- Easy installation</li> <li>- Energy metering</li> </ul>					
Approach										
	<p>R32 Monobloc : 12 / 14 / 16kW (1&amp;3Ø)</p> <ul style="list-style-type: none"> <li>- High energy efficiency</li> <li>- High corrosion resistance heat exchanger</li> <li>- New interface (standard III remote controller)</li> <li>- LG ThinQ Wi-Fi control solution</li> <li>- Low noise mode operation with schedule setting</li> <li>- Easy commissioning by PC tool (LG heating configurator)</li> <li>- Interlocking operation with 3rd party boiler</li> </ul>		<p>R32 Hydrosplit : 12 / 14 / 16kW (1&amp;3Ø)</p>		<p>R410A Split : 12 / 14 / 16kW (1&amp;3Ø)</p>		<p>High Temperature : 16kW (1Ø)</p>		<p>Wall Mounted Hydro Kit : 5 / 7 / 9kW (1Ø) Floor Standing M/T Hydro Kit : 14 / 32kW (1Ø) Floor Standing H/T Hydro Kit : 14 / 25kW (1Ø)</p>	
	<ul style="list-style-type: none"> <li>- All in one concept (no refrigerant piping work)</li> </ul>		<ul style="list-style-type: none"> <li>- No refrigerant piping work</li> </ul>		<ul style="list-style-type: none"> <li>- Placing hydronic components and water piping in the mechanical room</li> </ul>		<ul style="list-style-type: none"> <li>- Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a)</li> <li>- Suitable for old radiator</li> </ul>		<ul style="list-style-type: none"> <li>- High energy efficiency (standard III remote controller)</li> <li>- LG ThinQ Wi-Fi control solution</li> <li>- Low noise mode operation with schedule setting</li> </ul>	
	<ul style="list-style-type: none"> <li>- Multiple Solution (heating, cooling and DHW supply)</li> <li>- Energy saving by utilizing renewable energy and high efficient equipment</li> <li>- Hybrid operation with existing facilities</li> <li>- Quick &amp; easy installation and commissioning</li> <li>- Economic support by incentive program</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out</li> </ul>		<ul style="list-style-type: none"> <li>- Simultaneous heating and cooling operation &lt;Wall Mounted Hydro Kit only&gt;</li> <li>- Saving mechanical room space</li> </ul>	
Benefit	<ul style="list-style-type: none"> <li>- Simple replacement of existing boiler while maintaining the existing heating system</li> <li>- Saving mechanical room space</li> </ul>		<ul style="list-style-type: none"> <li>- Reduce the potential risk of flammable refrigerant</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out</li> </ul>		<ul style="list-style-type: none"> <li>- Free of freezing risk against exposed water piping even long black out</li> </ul>		<ul style="list-style-type: none"> <li>- Simultaneous heating and cooling operation &lt;Wall Mounted Hydro Kit only&gt;</li> <li>- Saving mechanical room space</li> </ul>	

# LG HEATING SOLUTION OVERVIEW



Segment		Commercial
Target Vertical Segment		 <p>Office Building</p>
Customer Needs	Designer & Installer	<ul style="list-style-type: none"> <li>- Flexible design and application</li> <li>- Energy saving with continuous operation</li> </ul>
	End-User	<ul style="list-style-type: none"> <li>- Low operation cost</li> <li>- Reliable operation and long lifetime</li> <li>- Individual zone control</li> </ul>
		<b>MULTI V 5 with HYDRO KIT</b>
Approach		
	<p>Floor Standing M/T Hydro Kit : 14 / 32kW (1Ø)                      Floor Standing H/T Hydro Kit : 14 / 25kW (1Ø)                      Capacity variation depends on combination of ODU</p>	
	<ul style="list-style-type: none"> <li>- High energy efficiency</li> <li>- Energy saving through MULTI V 5 heat recovery</li> <li>- New interface (standard III remote controller)</li> <li>- Easy to install as it uses a compact and modular structure</li> <li>- High temperature concept of Hydro Kit</li> </ul>	
	<p>&lt;Floor Standing H/T Hydro Kit&gt;                      - Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a)</p>	
Benefit	<ul style="list-style-type: none"> <li>- Multiple Solution (heating, cooling and DHW supply)</li> <li>- Operation cost saving</li> <li>- Simultaneous heating and cooling operation</li> <li>- Applicable for various building type</li> <li>- Convenient installation &amp; maintenance</li> </ul>	

Commercial	
	 <p>Hotel &amp; Hospital</p>
	 <p>City Farm</p>
	<ul style="list-style-type: none"> <li>- Large amount of domestic hot water</li> <li>- Space Heating, domestic hot water, cooling</li> <li>- Flexible design and application</li> <li>- Energy saving with continuous operation</li> </ul>
	<ul style="list-style-type: none"> <li>- Large amount of domestic hot water</li> <li>- Energy saving with continuous operation</li> </ul>
	<ul style="list-style-type: none"> <li>- Low operation cost</li> <li>- Reliable operation and long lifetime</li> <li>- Individual zone control</li> </ul>
	<ul style="list-style-type: none"> <li>- Low operation cost</li> <li>- Reliable operation with proper water temperature</li> </ul>
	<b>MULTI V 5 with HYDRO KIT</b>
	<b>Inverter Scroll Chiller Heat Pump</b>
Approach	
	
	<p>Floor Standing M/T Hydro Kit : 14 / 32kW (1Ø)                      Floor Standing H/T Hydro Kit : 14 / 25kW (1Ø)                      Capacity variation depends on combination of ODU</p>
	<p>Inverter Scroll Chiller Heat Pump : 70 ~ 246kW (3Ø)</p>
	<ul style="list-style-type: none"> <li>- High energy efficiency</li> <li>- Energy saving through MULTI V 5 heat recovery</li> <li>- New interface (standard III remote controller)</li> <li>- Easy to install as it uses a compact and modular structure</li> <li>- High temperature concept of Hydro Kit</li> </ul>
	<ul style="list-style-type: none"> <li>- High efficient inverter technology</li> <li>- Continuous heating operation</li> <li>- Low noise level</li> </ul>
	<p>&lt;Floor Standing H/T Hydro Kit&gt;                      - Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a)</p>
	<p>&lt;Floor Standing H/T Hydro Kit&gt;                      - Max. 80°C LWT by Cascade 2 stage compression (R410A - R134a)</p>
Benefit	<ul style="list-style-type: none"> <li>- Multiple Solution (heating, cooling and DHW supply)</li> <li>- Operation cost saving</li> <li>- Simultaneous heating and cooling operation</li> <li>- Applicable for various part load condition</li> <li>- Convenient installation &amp; maintenance</li> </ul>
	<ul style="list-style-type: none"> <li>- Multiple Solution (heating, cooling and DHW supply)</li> <li>- Operation cost saving</li> <li>- Convenient installation &amp; maintenance</li> </ul>

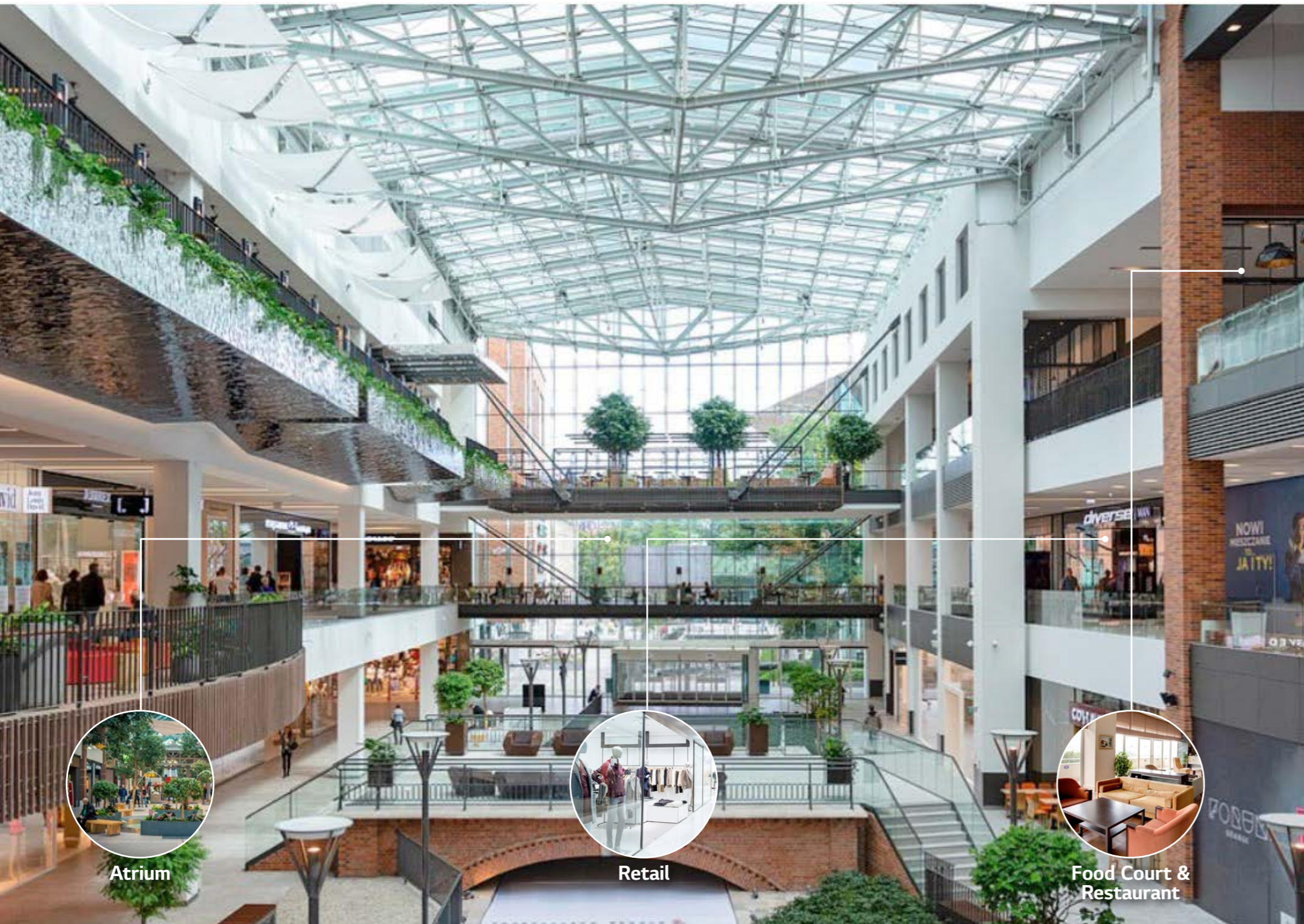
2

# BUSINESS

## BUSINESS

Proposal By Application	056
Introduction Of BMS	090
Introduction Of SVC Biz.	114
Introduction Of Energy Package	128

# RETAIL SPACE



## Why LG?

A typical shopping mall comprises of open-plan social areas and individual spaces. It needs to consider the requirements of each customer based on the characteristics of each space. Our HVAC Solutions provide customer satisfaction.

### Owner

- Building aesthetic
- Cost-Saving
- Comfort and a pleasant environment
- Reliability and maintenance

### Customer

- Reliable installation
- Convenience during installation
- Installation cost saving
- Convenient maintenance & service



## Contractor

LG not only provides an appropriate HVAC solution to its customers, but also supports the entire process from installation to maintenance



## Owner

LG HVAC solutions\* can provide the optimized solution in order to enhance building value.



# RETAIL SPACE



## Owner

### Cost-Saving

The various features for energy saving can reduce operation cost

- **Energy saving via high efficiency**
  - Multi V 5 high efficiency is above EER 4.55
  - Dual sensing(Temp.+Humidity) / Smart Load Control
  - Running cost 62% reduction against Water-cooled Chiller

Inside



Outside



- **Save installation units and space**
  - 1unit Max. 26HP outdoor can reduce product quantity

## Contractor

### Installation Cost-Saving

LG Air conditioner reduces installation

- **Initial cost saving**
  - Reduced 72% initial cost of VRF system against Water cooled Chiller system
- **Air purification kit**
  - no need for an additional air purifier
- **Central Controllers**
  - Max. indoor units

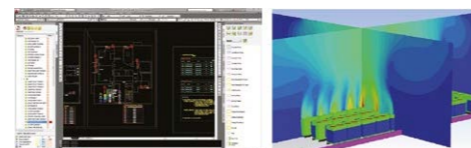
LG	32	64	128	256

## Contractor

### Reliable installation

Increased installation reliability through Various design tools and CFD analysis

- **LATS CAD & Revit, HVAC**
- **CFD Analysis**
- **Expanded piping capabilities**
  - IDU-IDU: 40m, ODU-IDU: 110m



## Contractor

### Convenience During Installation

Easy installation reduces installation time

- **Slim body height indoor unit**
  - 4Way cassette : 204mm, 288mm
- **Compact size VRF outdoor unit**
  - Unlike Chiller system, no need to install additional machine
- **Round Shape Cassette**
  - One sided piping
  - Outside Control Box
- **Stopper valve**



Piping in One Direction Only



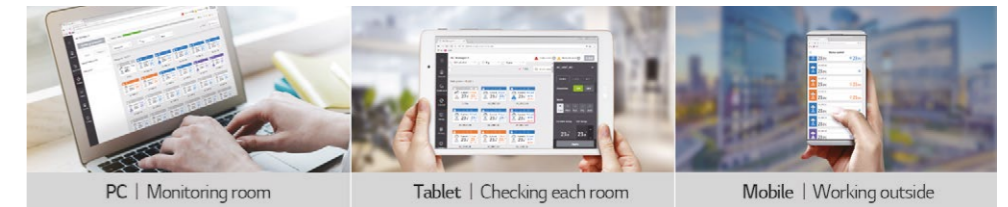
Hanger Cover

## Owner / Contractor

### Convenient Maintenance & Service

Advanced technology product reliability for product

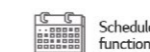
- **Sentence not clear**
  - Corrosion resistant black fin
  - Back up operation without stopping product
- **Convenient maintenance**
  - Central monitoring and risk management, TMS system
  - Individual operating cost distribution
  - Auto start up (LG MV)



PC | Monitoring room

Tablet | Checking each room

Mobile | Working outside



Provides state-of-the-art technology for high-reliability applications in different environments

- **During Installation Preserving Refrigerant**
  - Pump down & Pump out
- **Central monitoring and risk management (TMS)**
  - AC Manager 5, ACP 5, AC Smart 5, AC Ez touch
- **LG Service application**
  - Error Code & Trouble shooting
  - Technical Bulletin

PROPOSAL BY APPLICATION

# RESIDENTIAL BUILDING



## Why LG?

Content of shopping mall is used again. This section is for Residential buildings

### Developer

- Smart City Concept
- Zero Energy Building Concept
- Global Trend Zero Energy Building
- Green Smart Home Concept



### Developer

*A comfortable environment is very important for every residence.  
 LG provides the most suitable air conditioner based on the customers' needs.*



# RESIDENTIAL BUILDING



## Developer

### Visually Appealing

A visually appealing building is worth a lot more than a standard building layout.

→ Interior

- Multi Split and 1way cassette combination increases the attractiveness

→ Exterior

- Available multiple indoor units combined with 1 outdoor unit



## Developer

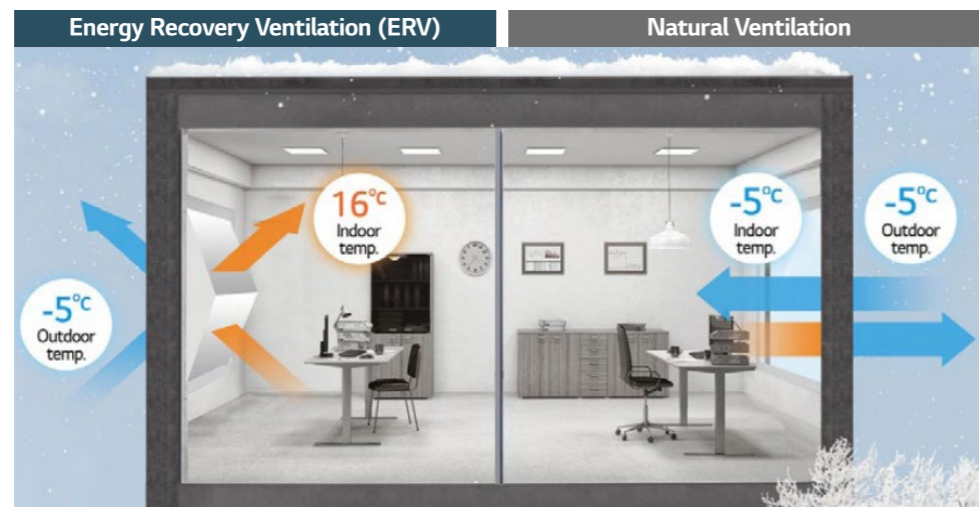
### Healthy Environment

According to the indoor environment conditions, if the sanitary conditions are poor, it may lead to an increased contamination

→ Air purification

- Available kits for 1way cassettes that captures fine and microfine dust particles through deodorization

→ Energy Recovery Ventilation



Comfortable air + Energy saving  
As opposed to a natural ventilation, a heat exchanger collects waste energy

Natural Ventilation  
Heat Energy Loss

## Developer

### Comfortable Environment

LG will provide great experiences to you Quick and Silent

It is important for people who stay at their home not to have needs about atmosphere

→ Quick

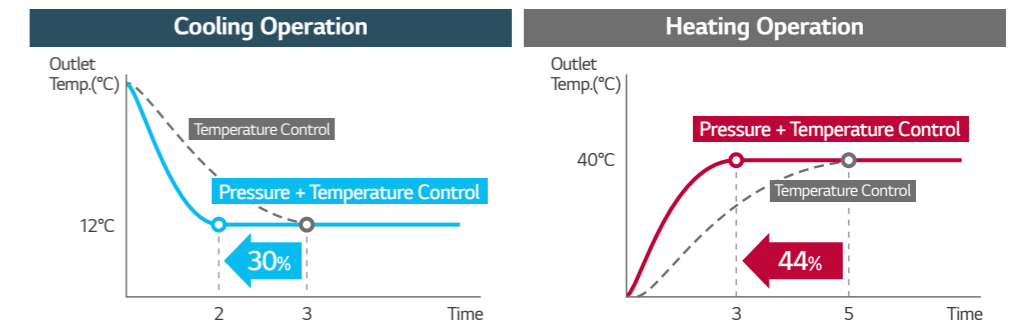
Running cooling and heating in a short time

→ Silent

LG has skills for running on a low noise mode

→ Circulation

LG has a ceiling fan to provide better comfort



## Developer

### Convenience

ThinQ™ and Remote Controller provide convenient control to customers

→ ThinQ™

Wherever & Whenever

→ Remote Controller

Setting by preferences





# FACTORY



Manufacturing Zone



Research & Development Zone



Dormitory Zone

## Why LG?

In a factory, usually a large sum of money is spent on HVAC systems. LG provides a variety of air conditioning systems for a factory.

### Owner

- All-in-one-Provider
- Operation Cost Saving
- Stable Operation



### Owner

*Insert a different text here. It is the same as top right. Avoid repetition*



# FACTORY



Owner

## All-In-One-Provider

LG provides a total solution for all the necessary systems that a factory may need.

→ **Total Solution**

Space Heating & Cooling, Hot Water, Process Water, Control, Maintenance, Engineering Support



**Factory** (Manufacturing)

Chiller, AHU

**Admin** (R&D, Office)

Indoor Unit, Multi V

**Welfare** (Dormitory, Restaurant)

Hydro Kit, Multi V

Owner

## Operation Cost Saving

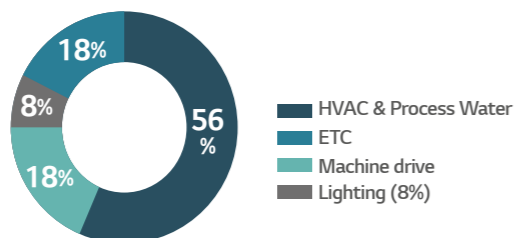
You can save money from factory utilities if you invest in an energy-efficient product.

→ **High Efficiency**

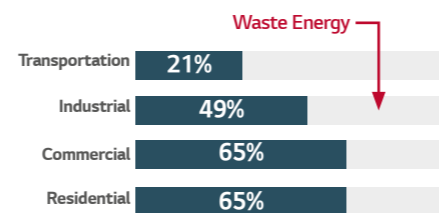
If you use high efficiency products such as Multi V, Inverter Scroll Chiller, and Hydro kit, you can save annual fee for energy.

→ **Waste Heat Recovery Solution**

Since product efficiency has a limit, we need another source to save both energy and cost which is an energy reusable.



\*Energy Use Ratio (Industrial Sector)



\*\*End Use Efficiency by Sector

Owner

## Stable Operation

LG solution provides a stable operation in all environments. and also that helps in decreasing manufacturing errors.

→ **Back-up operation**

In case of an error in the compression units, the back-up function avoids any brake in the functioning of the system

→ **TMS(Total Management System)**

By using Cloud server for monitoring, we do periodic inspections and visit service in a short time.

→ **Instantaneous blackout compensation**

After transient blackout, all systems are automatically returned right before conditions



Keep Operation



Quickly Respond

Factory Operation Rate  
Production Quantity  
**Critical Loss**

\*Source: U.S. Energy Information Administration, 2019.

Values include natural gas, petroleum, electricity, renewable energy, and coal.

It includes the fields of Computer, Electronic products, Electric equipment, Automobiles, Transportation equipment, Furniture, Miscellaneous

\*\*Source: Lawrence Livermore National Laboratory funded by the Department of Energy and UC Berkeley(2017)



Bed-occupancy Department

Outpatient Related Department

Diagnostic & treatment Department

Administrative Department

Service Department

Research & teaching Department

## Why LG?

Hospitals need to consider the necessary "healthcare attributes" that would eventually lead to an increased cost and design complexity. This in turn leads to delayed payback period and deteriorates investment efficiency.

### Owner

- Cost & Design complexity
- HVAC design in hospitals
- HVAC requirements in the hospitals



## Owner

*With LG's healthcare products and systems, ideal hospitals can be built that reassures the necessary "healthcare attributes".*





Owner

## Air Purification

LG Dual Vane cassette Air purification function purifies indoor air by 5 phase filter.

→ **Reusable Filter**

Each filter can be reused just by washing without replacement.

→ **Air Quality Status**

It is easy to check air quality status with several devices (Indoor unit LED, Remote controller, Mobile)



Owner

## Therapeutic Condition

Different temperature and humidity levels based on the requirement of the space.

→ **Individual space control**

Through the individual target condition (temperature, pressure, air quality, filtration) control by the indoor unit, it is possible to satisfy the design requirements.

→ **DX ERV**

ERV provides quick ventilation and saves energy through its heat recovery system.

Owner

## Infection Control

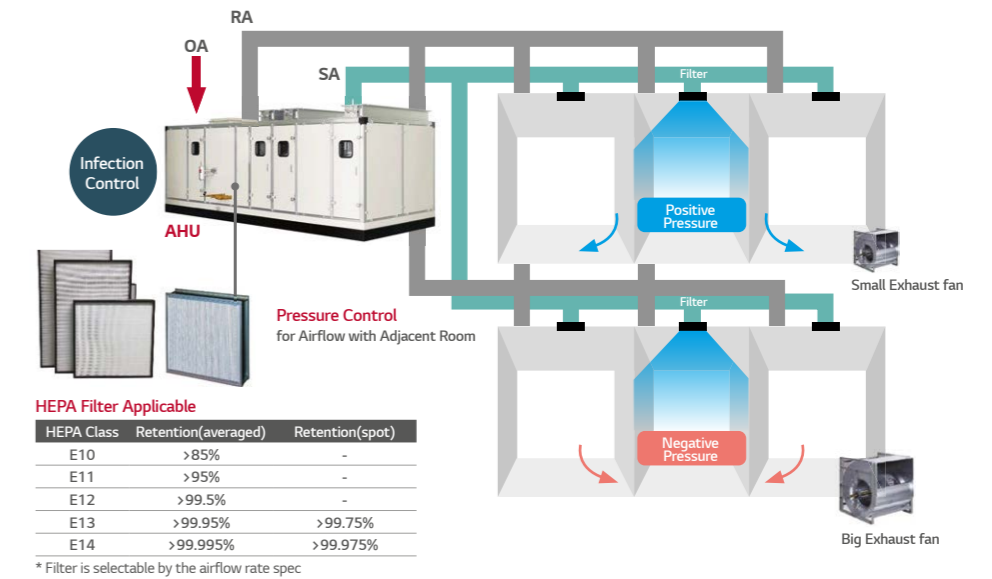
Filtration and control room pressure is necessary for blocking the infection.

→ **DX ERV**

E.S.P. value for each motor which are in charge of supplying and exhausting air respectively can be set individually to set the room pressure.

→ **AHU**

The AHU can control the temperature and humidity of the space, as well as being compatible with HEPA grade filters, and modulate the intake and discharge air volumes by diffuser design with exhaust fan to adjust the room pressure



Owner

## Reliable Design & System

LG solution provides a reliable design & system for all kinds of hospital requirements

→ **Better BIM support to confirm the design**

Devise the best HVAC design for any project with LG engineering tools. LATS REVIT and CFD programs support the design work by visualization

→ **Backup system**

Inverter scroll chiller not only has basic backup function but it has a backup system integrated in it. In case of Multi V, basic backup function is applied. This features reduces the risk of malfunction.

→ **Refrigerant Leak Detection**

Leaking refrigerant can cause suffocation or explosion. Refrigerant leakage detector makes our space safer



## Why LG?

Hotel is generally composed of social area and individual rooms. It needs to consider customers according to the characteristics of each space. Moreover, Building a new hotel requires tremendous investment and long term commitment to maintain its sound condition. Owner looks for reasonable investment cost which will benefit their year-round business. Our HVAC solutions ensure customers' satisfaction.

### Owner

- Cost Saving
- Comfort
- Safety
- Increase Building Value

### Consultant

- Design Convenience
- Customer Satisfaction
- Increase Building Value
- Safety



### Owner

LG HVAC systems provide the best experience to your hotel guests.



### Consultant

LG solution not only provides a pleasant and a comfortable indoor environment, but also offers a harmonious design with assured safety that doesn't interfere with the building's interior.





Owner

## Cost Saving

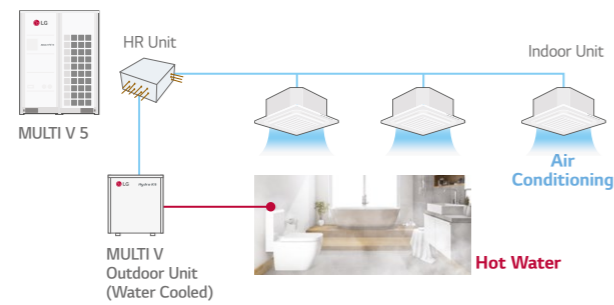
The hotel owner desires to minimize his overall yearly cost on investment, operations and maintenance

→ Investment cost saving (installation)

Multi V system is relatively simple, less components & installation time. Helps owner to save installation cost.

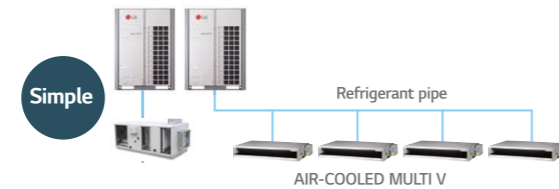
→ Operation Cost Saving

Multi V Heat Recovery system provides maximum efficiency with simultaneous operation. Our Hydro kit makes it possible to supply hot water with high efficiency.



→ Maintenance Cost Saving

Multi V system is relatively simple, so it is not necessary to have an expert person to handle the system and maintenance.



Owner

## Pleasant Environment & Safety

Satisfied guests and their excellent hotel stay experience starts from their safety and a pleasant room atmosphere

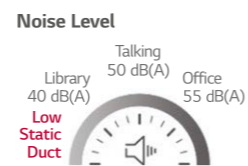
→ Safety from refrigerant

Ensure customer's safety with real-time refrigerant leak detection

→ Low noise operations



1) ARNU05GL1G2 model, high fan speed



→ Hotel-oriented control system

Guest room control by check-in and occupancy status

Consultant

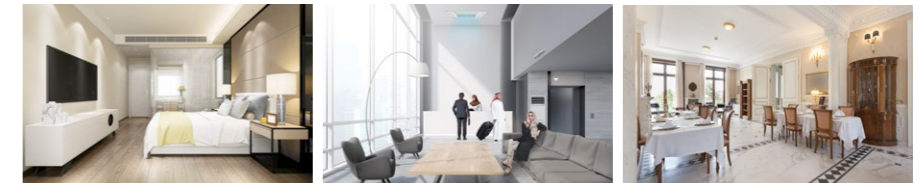
## Easy & Flexible Design

→ An applicable and differentiated solution that considers different spaces' characteristics

Guest room : Compact size duct type indoor unit

Lobby (High Ceiling / Volume) : DX AHU

Various application solution that can be applied other space (Laundry, Kitchen, Etc.)



→ Advanced Engineering tool that supports an easy design

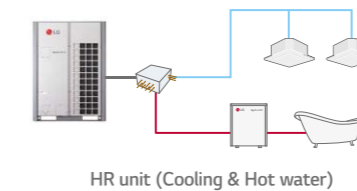
Easy model selection by LATS HVAC / CAD / Revit

Air flow analysis by CFD

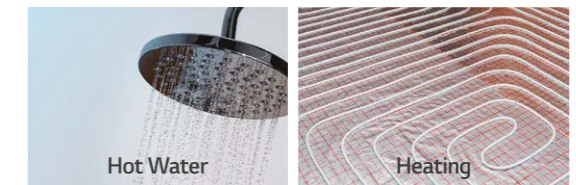
Energy simulation by LATS Energy / Energy modeling tool

→ A solution that provides cooling/heating as well as a hot water supply without the conventional hot water system.

Hot water supply by Hydro Kit System



HR unit (Cooling & Hot water)



# ACADEMIC INSTITUTION



## Why LG?

General School is composed to common area and individual class rooms. It needs to consider students according to the characteristics of each space. Our HVAC solutions provide satisfaction to customers.

### Customer

- High Installation Reliability
- Installation Cost Saving
- Convenient Installation
- Maintenance & Service

### Owner

- Improving Student's Concentration
- Reducing Operation Cost
- Securing Student's Health
- Securing Student's Hygiene
- Control Management



### Customer

LG HVAC provides appropriate solution to customers and also supports all the processes from installation to maintenance.



### Owner

Clean air is one of the most important factor for Educational buildings. LG HVAC can provide highly suitable solution for schools..



# ACADEMIC INSTITUTION

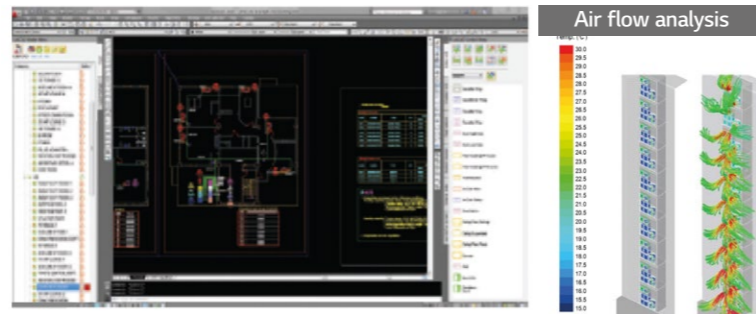


## Contractor

### High Installation Reliability

Increased installation reliability through various design tools and CFD analysis.

- LATS CAD & Revit, HVAC
- CFD Analysis
- Expanded piping capabilities
- IDU-IDU : 40m, ODU-IDU : 110m



## Contractor

### Installation Cost Saving

LG Air conditioner reduces installation cost.



- Outdoor unit capacity range
- Default drain pump in low static duct
- Air purification kit
- No need additional air purifier
- Central Controllers
- Max. indoor units



	AC Ez	AC Ez Touch	AC Smart 5	ACP 5
LG	32	64	128	256
A co.	16	64	64	64

## Contractor

### Convenient Installation

Easy installation reduces installation time.

- Slim body height indoor unit
- 4Way cassette : 204mm, 288mm
- Low static duct : 190mm



- Compact size VRF outdoor unit
- Low Foot print area, weight
- Round Shape Cassette
- One sided piping
- Outside Control Box
- Stopper valve

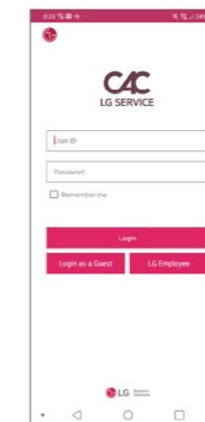


## Contractor

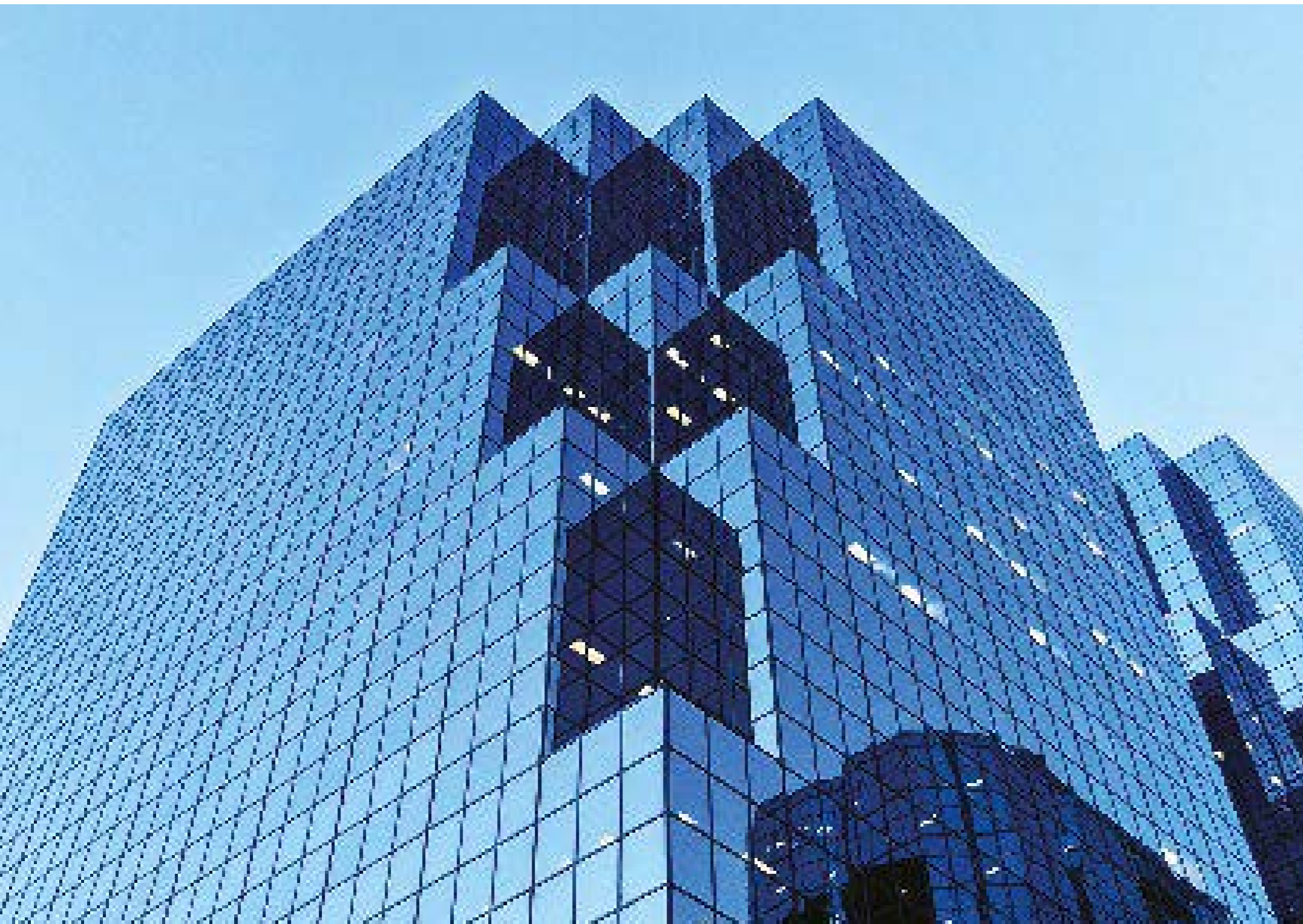
### Convenient Maintenance & Service

Provides state-of-the-art technology for high reliability solutions in different environments

- During use small letters and not capitals
- Pump down & Pump out
- Central monitoring and risk management (TMS)
- AC Manager 5, ACP 5, AC Smart 5, AC Ez touch
- LG Service application
- Error Code & Trouble shooting
- Technical Bulletin







## Why LG?

Time and cost saving is very important for a contractor. LG solutions provide advanced products for offices.

### Contractor

#### Save Cost

- Large Capacity Outdoor Unit
- Air Purification Kit
- Anti Corrosion Black Fin II
- Less Device, More Control

#### Convenient Installation & Maintenance

- Easy Installation with Compact Indoor Unit
- Easy Installation of Indoor Unit
- Large Range of EEV Kit
- Convenient Service

#### High Installation Reliability

- LATS CAD & Revit, HVAC
- Energy Modeling
- CFD Analysis



## Contractor

*Time and cost saving is very important for a contractor. LG solutions provide advanced products for offices.*



# OFFICE



## Contractor

### Save Cost

#### Cost saving by efficient cost use.

→ **Large capacity outdoor unit**

- 1 Unit Max 26HP
- Up to 23% reduction in installation area (based on 260HP)

→ **Air purification kit**

- No need for an additional air purifier

→ **Anti corrosion Black Fin II**

- Installation of more 300m from the coast without additional coating
- Test by TÜV



→ **Less device, more control**

- Control more indoor units with one central controller



LG	AC Ez	AC Ez Touch	AC Smart 5	ACP 5
	32	64	128	256

[Max. indoor units]

## Contractor

### Convenient Installation & Maintenance

#### Save time with easy-to-install products.

→ **Easy Installation with compact indoor unit**

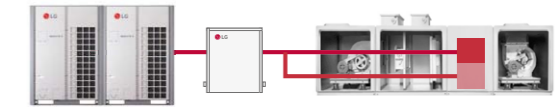
- Small space Installation with Slim Height

→ **Easy installation of indoor unit**

- One sided piping & Outside Control Box
- One push panel & sliding corner
- Convenient E.S.P Setting
- High Ceiling Mode

→ **Large range of EEV kit**

- Available up to 168kW
- Easy piping and wiring during installation



→ **Convenient service**

- Mobile Service app.
- Mobile LGMV
- Cycle Monitoring View

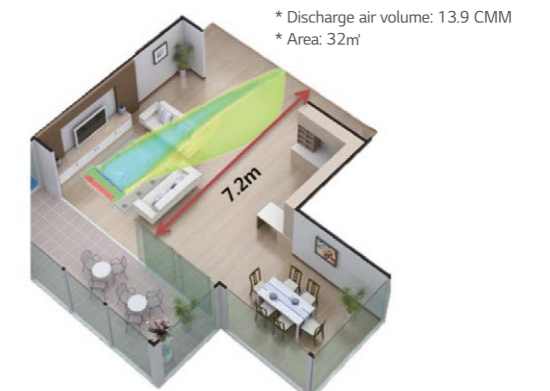


## Contractor

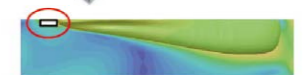
### High Installation Reliability

#### Increased installation reliability through various design tools and CFD analysis.

- LATS CAD & Revit, HVAC
- Energy Modeling
- CFD Analysis



Airflow Distribution Simulation Result



※ Apartment living room with ceiling height 2.1m, width 4m, length 8m  
 ※ Air cleaning area of 33m² with 1way Cassette

# RETAIL SPACE CONTROL SOLUTION



**Retail**

Proportionally distribute and manage the power consumption by tenants

Real-time system issue detection and alert

**Maintenance Office**

Reduces energy by checking operational trends

**Atrium**

Integrated management of AHU applied to large spaces

Chiller and VRF integrated control

PDI

Central controller (Operation trend)

Central controller (Operation trend)

Comm. Kit

Central controller (Operation trend) + Chiller option kit

# RESIDENTIAL CONTROL SOLUTION



**Home**

Anytime, anywhere air conditioner control and access

Integrate systems for smart connectivity throughout

**Bed Room**

Use a familiar residential thermostat

Simple interlocking control by remote control

**Apartment / Residence**

Stable system operation

Wi-Fi Modem

Modbus RTU

Dry contact For thermostat

Wired remote controller

Independent power module

## Design Proposal

Retail	Maintenance Office	Atrium	Atrium	Atrium	Atrium
<p>Proportionally distribute and manage power consumption by the tenant</p> <p>Fast problem detection and alarms</p>	<p>Reduces energy by checking operational trends</p>	<p>Integrated management of AHU applied to large spaces</p>	<p>Chiller and VRF integrated control</p>	<p>Return air</p>	<p>Discharge air</p>
<p><b>PPWRDB000</b> PDI Standard (2 port)</p> <ul style="list-style-type: none"> <li>• Max. 128 IDU</li> </ul> <p><b>PQNUD1S40</b> PDI Premium (8 port)</p> <ul style="list-style-type: none"> <li>• Max. 128 IDU</li> </ul>	<p><b>PAC5A000</b> AC Smart 5</p> <ul style="list-style-type: none"> <li>• BMS Integration (BACnet IP, Modbus TCP)</li> </ul> <p><b>PACP5A000</b> ACP 5</p> <ul style="list-style-type: none"> <li>• BMS Integration (BACnet IP, Modbus TCP)</li> </ul>	<p><b>PAHCMR000</b> AHU Comm. Kit</p> <p><b>PAHCMS000</b> AHU Comm. Kit</p>	<p><b>PCHLLN000</b> Chiller option kit (S/W)</p> <p><b>PACP5A000</b> ACP 5</p> <p><b>PAC5A000</b> AC Smart 5</p>		

## Design Proposal

Home	Home	Bed Room	Bed Room	Apartment
<p>Control your home air conditioner anytime, anywhere</p>	<p>Build a Smart house</p>	<p>Use a familiar residential thermostat</p>	<p>Simple interlocking control by remote control</p>	<p>Stable system operation when indoor unit power is lost</p>
<p><b>PWFMD200</b> LG Wi-Fi modem</p> <p><b>Function</b></p> <ul style="list-style-type: none"> <li>• On / Off</li> <li>• Fan speed</li> <li>• Operation mode</li> <li>• Vane control</li> <li>• Reservation (Sleep, Weekly On / Off)</li> <li>• Error check</li> </ul>	<p><b>PDRYCB500</b> Modbus RTU (9,600bps)</p> <p><b>Function</b></p> <ul style="list-style-type: none"> <li>• Operation</li> <li>• Indoor temperature</li> <li>• Error alarm</li> <li>• Set operation mode</li> <li>• Set temperature</li> <li>• Set fan speed</li> </ul>	<p><b>PDRYCB300</b> <b>PDRYCB320</b> 8 contact point</p> <p><b>Input</b></p> <ul style="list-style-type: none"> <li>• Universal Input*</li> <li>• Operation On / Off</li> <li>• Thermo On / Off</li> <li>• Operation mode (Fan / Heat / Cool)</li> <li>• Fan speed (Low / Middle / High)</li> </ul> <p><b>Output</b></p> <ul style="list-style-type: none"> <li>• Operation On / Off status</li> <li>• Error alarm</li> </ul>	<p><b>PREMTB100</b> Wired remote controller</p> <ul style="list-style-type: none"> <li>• 4.3 inch color LCD</li> <li>• Touch button</li> </ul>	<p><b>PRIP0</b> Independent power module</p> <ul style="list-style-type: none"> <li>• EEV full close function</li> </ul>

# HOSPITAL CONTROL SOLUTION



### Hospital Ward

Proper airflow management for patients



Monitor the comfort level for each hospital ward



Control fan speed and air volume



### Service Zone

Energy savings based on flexible scheduling



### Lobby

Centralized management of AHU for large spaces



## Design Proposal

Hospital Ward			Service Zone	Lobby
Proper airflow management for patients	Monitor the comfort level for each hospital ward	External device interlock control	Energy savings based on flexible scheduling	Centralized management of AHU for large space
<b>PTV5MA0</b> Human detection sensor	<b>PACS5A000</b> AC Smart 5	<b>PDRYCB400</b> 2 contact point	<b>PACS5A000</b> AC Smart 5	<b>PAHCMR000</b> AHU Comm. Kit
	• BMS Integration (BACnet IP, Modbus TCP)	<b>Input</b> • Operation On / Off	• BMS Integration (BACnet IP, Modbus TCP)	• Return air
		<b>Output</b> • Operation On / Off status • Error alarm	<b>PACP5A000</b> ACP 5	
<b>PREMTB100</b> Wired remote controller	<b>PACP5A000</b> ACP 5		• BMS Integration (BACnet IP, Modbus TCP)	<b>PAHCMS000</b> AHU Comm. Kit
• 4.3 inch color LCD • Touch button	• BMS Integration (BACnet IP, Modbus TCP)			• Discharge air

# HOTEL CONTROL SOLUTION



### Guest Rooms

Air conditioner automatically switches off when guests depart



Integrated control of air conditioner with the hotel room controller



Air conditioner can be controlled with existing hotel thermostat



Prioritizes guest safety with refrigerant leak detection



### Reception

Air conditioner control in conjunction with check-in or check out



### Public Areas

Centralized management of the public areas

## Design Proposal

Guest Room				Lobby
The air conditioner automatically turns off when guests leave	Integrated control of air conditioner with the hotel room controller	Control with existing hotel thermostat	Guest safety is the first priority	Air conditioner control in conjunction with check-in or check out
<b>PDRYCB400</b> 2 contact point	<b>PDRYCB500</b> Modbus RTU (9,600bps)	<b>PDRYCB300</b> <b>PDRYCB320</b> 8 contact point	<b>PRLDNV50</b> Refrigerant leakage detector • 6,000ppm	<b>PACS5A000</b> AC Smart 5
<b>Input</b> • Operation On / Off	<b>Function</b> • Operation • Indoor temperature • Error alarm • Set run mode • Set temperature • Set fan speed	<b>Input</b> • Universal Input* • Operation On / Off • Thermo On / Off • Operation mode (Fan / Heat / Cool) • Fan speed (Low / Middle / High)		• BMS Integration (BACnet IP, Modbus TCP)
<b>Output</b> • Operation On / Off status • Error alarm		<b>Output</b> • Operation On / Off status • Error alarm	<b>PREMTB100</b> Wired remote controller	
			• 4.3 inch color LCD • Touch button	<b>PACP5A000</b> ACP 5
				• BMS Integration (BACnet IP, Modbus TCP)

# ACADEMIC INSTITUTION CONTROL SOLUTION



### Classroom

Automatically save energy in the absence of students



Central controls prevent students from arbitrary control



### Lecture Hall

Schedule management according to academic plan



### Maintenance Office

Integrated management of distributed buildings



Centralized management with multiple interfaces



## Design Proposal

Class Room	Lecture Room	Maintenance Office
<p>Automatically save energy in the absence of students</p> <p>Central controls prevent students from arbitrary control</p>	<p>Schedule management according to academic plan</p>	<p>Integrated management of distributed buildings</p> <p>Centralized management with multiple interfaces</p>
<p>PTV5MA0 Human detection sensor</p> <p>PREMTB100 Wired remote controller</p> <ul style="list-style-type: none"> <li>4.3 inch color LCD</li> <li>Touch button</li> </ul>	<p>PACS5A000 AC Smart 5</p> <ul style="list-style-type: none"> <li>BMS Integration (BACnet IP, Modbus TCP)</li> </ul> <p>PACP5A000 ACP 5</p> <ul style="list-style-type: none"> <li>BMS Integration (BACnet IP, Modbus TCP)</li> </ul>	<p>PACM5A000 AC Manager 5</p>

# OFFICE CONTROL SOLUTION



### Maintenance Office

Energy savings and management throughout the building



Integrated management of HVAC with BMS system



Reduce costs by replacing BMS



### Office Room

Reasonable power distribution to tenants



### Server Room

24-hour backup management



### Meeting Room

Energy savings based on occupancy detection



## Design Proposal

Maintenance Office	Office Room	Server Room	Meeting Room
<p>Energy savings and management throughout the building</p> <p>Integrated management of HVAC with BMS system</p> <p>Reduce costs by replacing BMS</p>	<p>Reasonable power distribution to tenants</p>	<p>Main equipment 24 hours back up management</p>	<p>Energy savings based on occupancy detection</p>
<p>PACS5A000 AC Smart 5</p> <ul style="list-style-type: none"> <li>BMS Integration (BACnet IP, Modbus TCP)</li> </ul> <p>PACP5A000 ACP 5</p> <ul style="list-style-type: none"> <li>BMS Integration (BACnet IP, Modbus TCP)</li> </ul>	<p>PLNWKB000 LonWorks gateway</p> <p>PEXPMB000 ACS IO Module</p> <p>PPWRDB000 PDI Standard (2 port)</p> <ul style="list-style-type: none"> <li>Max. 128 IDU</li> </ul> <p>PQNUD1S40 PDI Premium (8 port)</p> <ul style="list-style-type: none"> <li>Max. 128 IDU</li> </ul>	<p>PACS5A000 AC Smart 5</p> <ul style="list-style-type: none"> <li>BMS Integration (BACnet IP, Modbus TCP)</li> </ul> <p>PACP5A000 ACP 5</p> <ul style="list-style-type: none"> <li>BMS Integration (BACnet IP, Modbus TCP)</li> </ul>	<p>PTV5MA0 Human detection sensor</p> <p>PREMTB100 Wired remote controller</p> <ul style="list-style-type: none"> <li>4.3 inch color LCD</li> <li>Touch button</li> </ul>

# BECON™ building solution



Innovative building management solution in your hands. Our optimized solutions provide integrated control for customers configuration of various equipment in a building and provides an intuitive interface to maximize operational efficiency.



## ENERGY REDUCTION

BECON Building Solution performs automatic control of energy accurately by perfect interlocks with building equipment.



## CONVENIENT SYSTEM

BECON Building Solution gives exact information through intuitive interface.



## INTEGRATED SOLUTION

BECON Building Solution supports customized site solution, to manage equipment and control system.

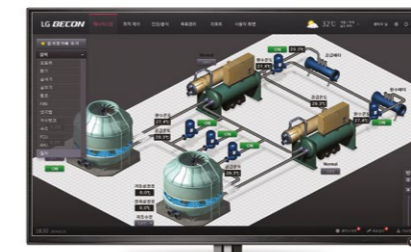




BECON Building Solution integrates all equipment of a building into a single platform. It allows flexible and consolidated control, interworking with different systems.



INTEGRATED CONTROL CENTER

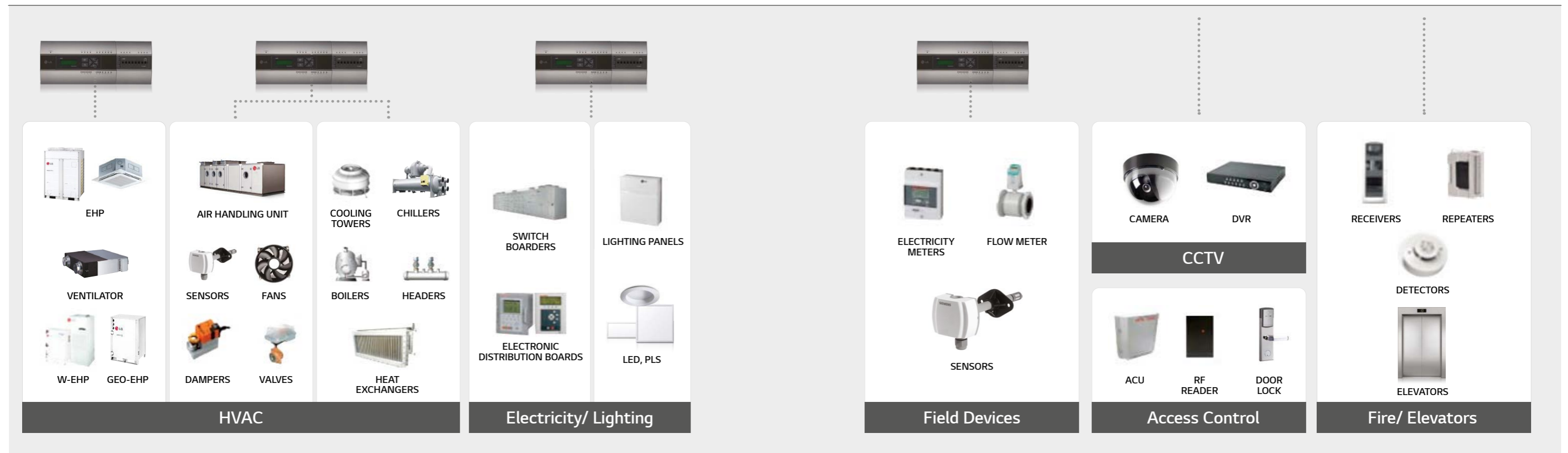


BECON MANAGER



BECON ENERGY

## BUILDING AUTOMATION NETWORK



INTRODUCTION OF BMS

# BECON™ manager



**Integrated Monitoring / Space Explore / Facility Structure / Combined Analysis Tool**  
Innovative and streamlined GUI at a glance, and category-specific movement for convenience in one hand! With BECON manager, you can meet/face a whole new world with unprecedented building systems you've never experienced before.



ENERGY  
MANAGEMENT



INTEGRATION &  
CONTROL



ZONE  
CONTROL



USER-  
ORIENTED UX



REMOTE CONTROL  
ALARM & SMS



WIDE PROTOCOL  
INTEROPERABILITY







## Integrated Monitoring

You can check the key contents of each user at a glance. You can monitor the trends of key control points without entering menus.



### Custom Integrated Monitoring

BECON manager provides the optimized browsing and quick control with the convenient inter-floor movement and view transition without moving into other menus.



## Space Explorer / Equipment Structure Diagram

BECON manager delivers efficient integrated control finding suitable display with easy interlink function among views.



### Quick and Easy Space Explorer / Facility Structure

Users enable to browse and move the information of each floor through mouse wheel and over. It is available to access the targeted facility information by quick and easy views switching and to select and control various facilities en bloc.



## Timeline

You can compare the control point trend with space information easily and accurately. The alerts and reservations referring to the history of user actions are indicated as colored icons in the time-series for a quick site check.



### Time / Space Timeline

Timeline is connected to the space explorer and equipment structure diagram to combine them into one space and time for comparison.

### Key History Display

Timeline displays alerts, errors, reservations, and user action history for accurate identification of issues.



## Multiple View

BECON manager delivers efficient integrated control finding suitable display with easy interlink function among views.



### Consecutive Multiple View

It is available to promptly connect the link of displays in terms of main functions such as Integrated Monitoring, Space Explore, Facility structure, Combination Analysis Tool, Timeline, and Warning Alert etc.



## Combined Analysis Tool

With functions to conduct fast conditional search and identify results for possible issues, required time to resolve the issues is reducing. You can make a cross-search on one screen for all control point to identify all equipment with issues thoroughly.



## Convenient Combined Analysis Tool

The combined analysis tool identifies the condition of multiple pieces of equipment at the current speed and provides a function of searching for them by type / condition.

### Search Condition Categories

- All equipment** : Search for properties of all equipment (except for lighting)
- Specific equipment** : Search for particular types of equipment based on detailed criteria (except for lighting)
- Lighting** : Search condition for lighting by building and floor, search result indicate key properties of lighting
- Floor** : Search condition for all equipment by building and floor (except for lighting)

### Searching and Setting Filters

#### Searching

After set and input conditions, results are displayed.

#### Filter Settings

After selecting a property, number of corresponding properties appears

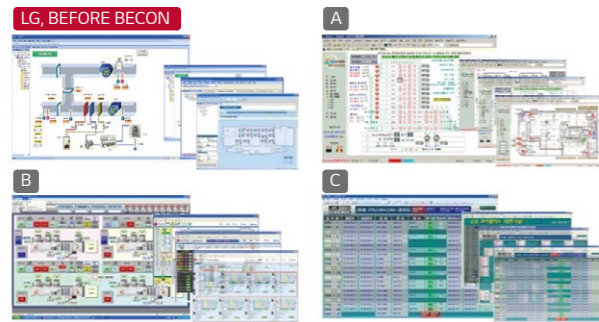


## BECON Manager Features

AS-IS

### Two-dimensional Structure

Multi-step is necessary for searching information  
Different information needs different screens



### Fixed Information

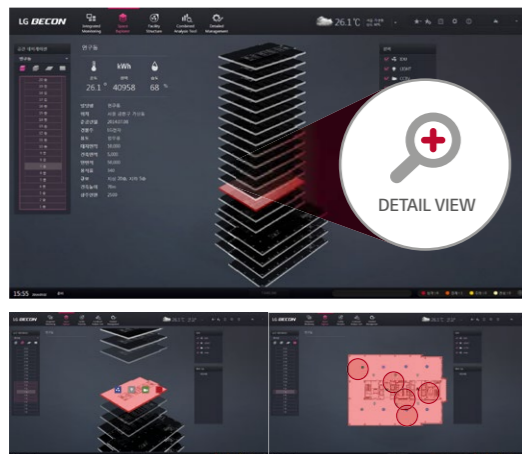
Customizing the screen is not allowed



BECON MANAGER

### Three-dimensional structure

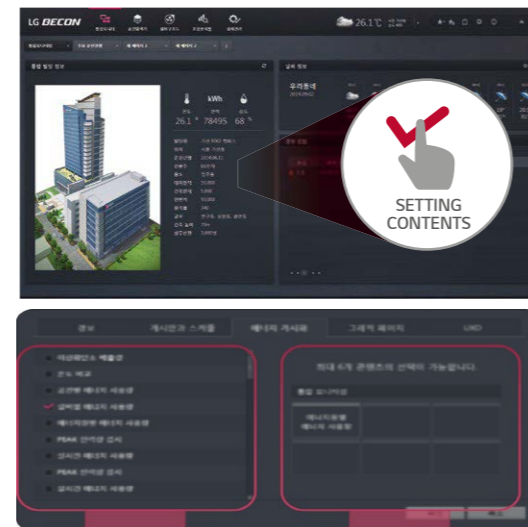
Customizing the screen is not allowed



Intuitive access for floors and facilities  
(Analyzing status of each floor and facilities)

### Dashboard

-Setting important items for decision making  
-Setting customized items for building managers



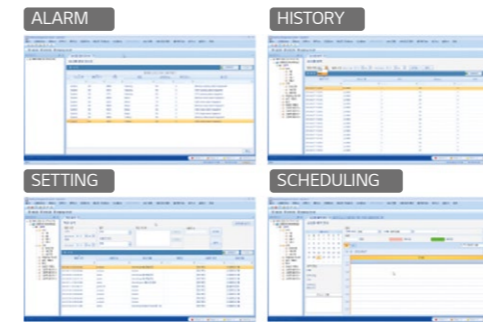
Choosing items

Setting items

AS-IS

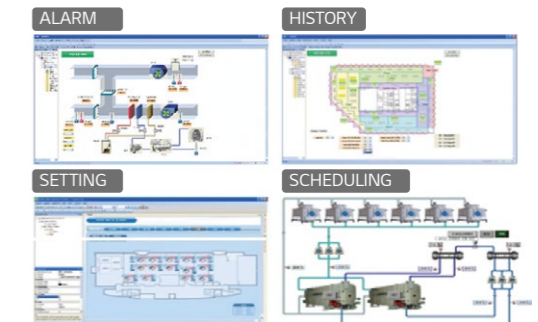
### Separated Information

Hard to analyze the causes of problems



### Inflexible Information Searching

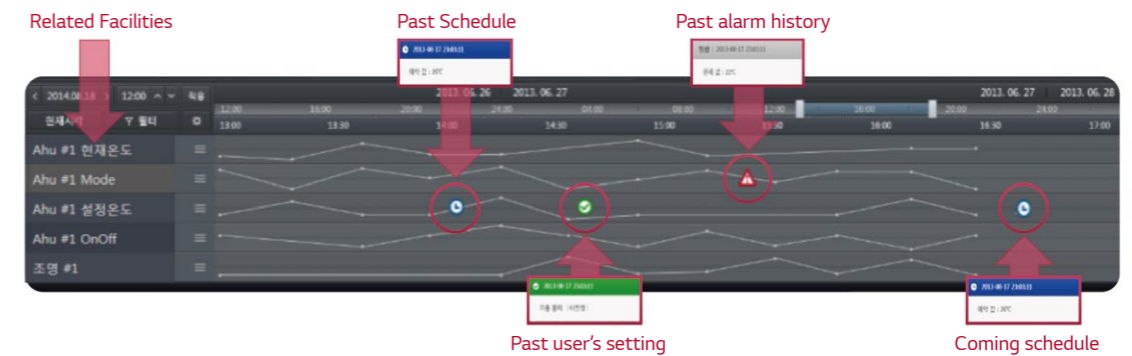
Searching information through fixed conditions  
Unchangeable information for each screen



BECON MANAGER

### Integrated Information

Easy to analyze the causes of problems



### Flexible Information Searching

\*Searching spaces and facilities in various conditions  
\*Visualize the results





## OPTIMIZED ENERGY MANAGEMENT REFLECTING PAST, PRESENT, AND FUTURE

### BECON™ Energy

#### Energy Scan / Target Management / Diagnostic Analysis / Optimized Control

This is a building energy navigator that shows and implements an optimized energy. Its management plan is based on the overall judgement of the energy status.



#### ENERGY DASHBOARD

Effective visualization of the overall energy consumption status



#### OPTIMIZED CONTROL

Energy saving / comfort level simulation based on energy consumption prediction and one-click operation for easy and direct energy saving efforts



#### DIAGNOSIS / ANALYSIS

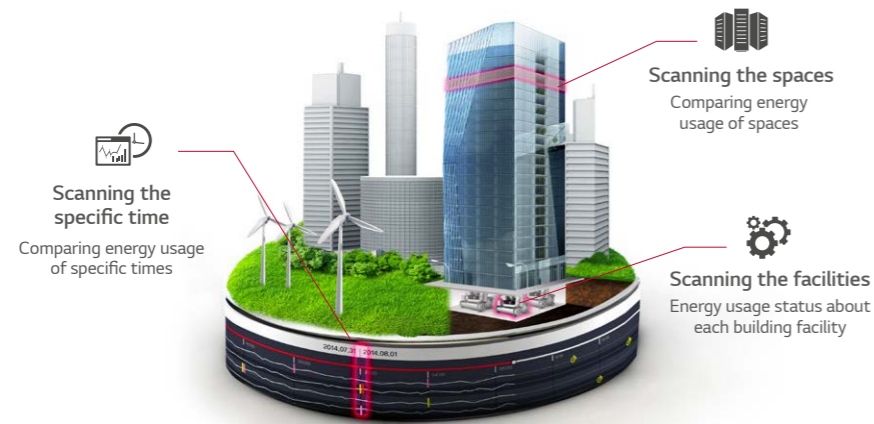
Diagnosed abnormal conditions based on energy consumption and equipment operation history analysis





## Dashboard / Energy Scan

Areas consuming much energy in the building are identified for energy scan or optimized control screen directly. This is a function that shows the energy consumption status by heat source system, space, equipment, etc. Here, you can see the trend graph/stacked graph and compare consumption of different spaces and times.



### Visualization of energy usage

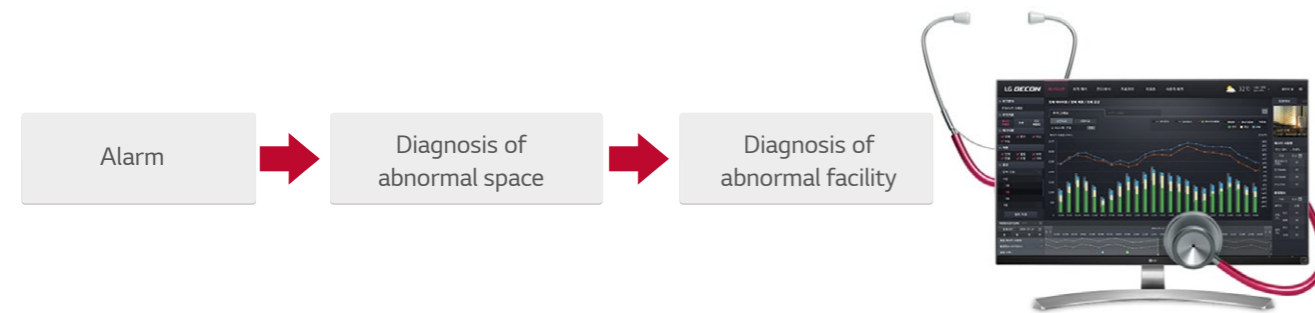
- A function that shows energy consumption status by heat source, system, space, equipment, etc.
- Offering energy trend chart and accumulated energy usage graph

### Energy usage by specific time and spaces

- Energy consumption status of a particular date comparison and comfort index provided
- Energy consumption status compared and comfort level index provided for a certain space

## Diagnosis / Analysis

This is a function that analyzes the operation conditions by space / equipment based on past statistical data to detect abnormal patterns and identify the root causes of issues.



### Equipment abnormally diagnosis & cause identification

It finds problematic spaces and facilities by sensing abnormal pattern of energy usage.

## Target Management / History Management

This is a function that lets the user set the yearly / monthly target energy consumption to facilitate energy consumption management as per the target.

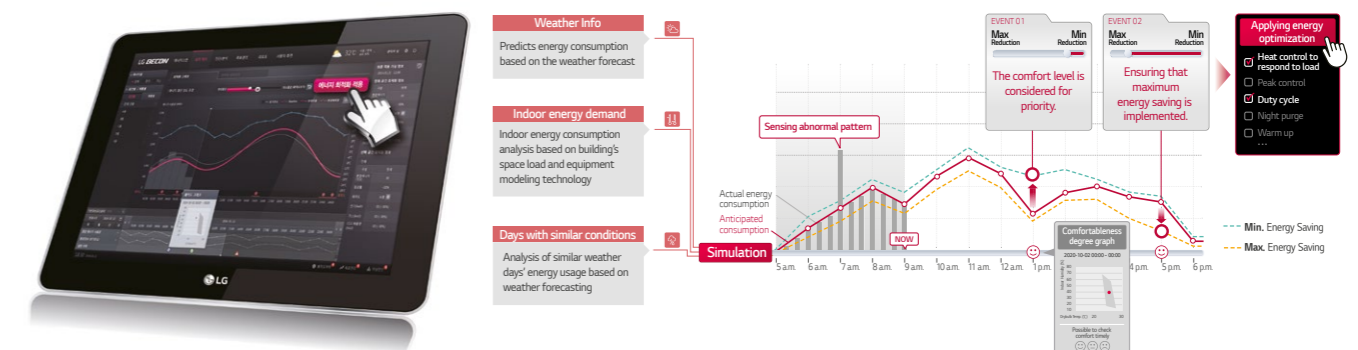


### Energy target and cost management

It provides statistical predictions based on the past data and helps you manage goals by space/energy source.

## Optimized Energy Control

This function predicts the energy consumption / comfort level based on the weather information, previous year's consumption, and the indoor energy demand among other factors and control the conditions optimally. The operator can realize energy saving based on the building's operation environment and business objects.





## Differentiated Graphic User Interface

### IDEA Communication Design Winner

IDEA, RedDot, and iF are world's three major design awards. IDEA's Finalist and RedDot's Winner has proved the design excellence of BECON solution.



## Red Dot Communication Design Winner

### Red Dot Communication Design Winner

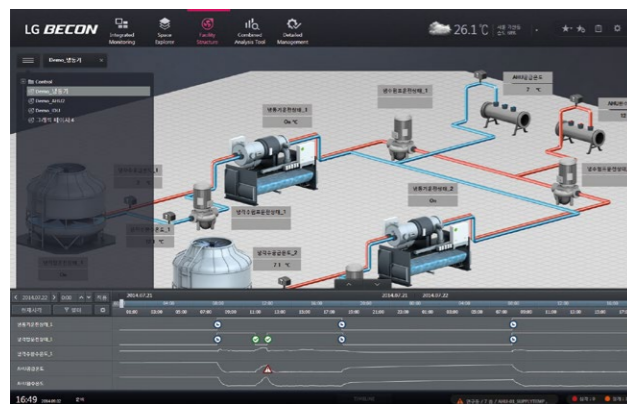
IDEA, RedDot, and iF are world's three major design awards. IDEA's Finalist and RedDot's Winner has proved the design excellence of BECON solution.



## BECON Manager

An overview of the conditions of related facilities can be used for faster action control with their history information shown on the timeline

Space Explorer provides easy-to-use browsing and quick control with the convenient inter-floor movement and shows transition without moving into other menus



## BECON Energy

Overall monitoring of building energy usage and easy check of energy overuse by colored area. Visualization for energy consumption status

Energy saving through optimized facility control. Predicting future energy usage and indoor comfort level



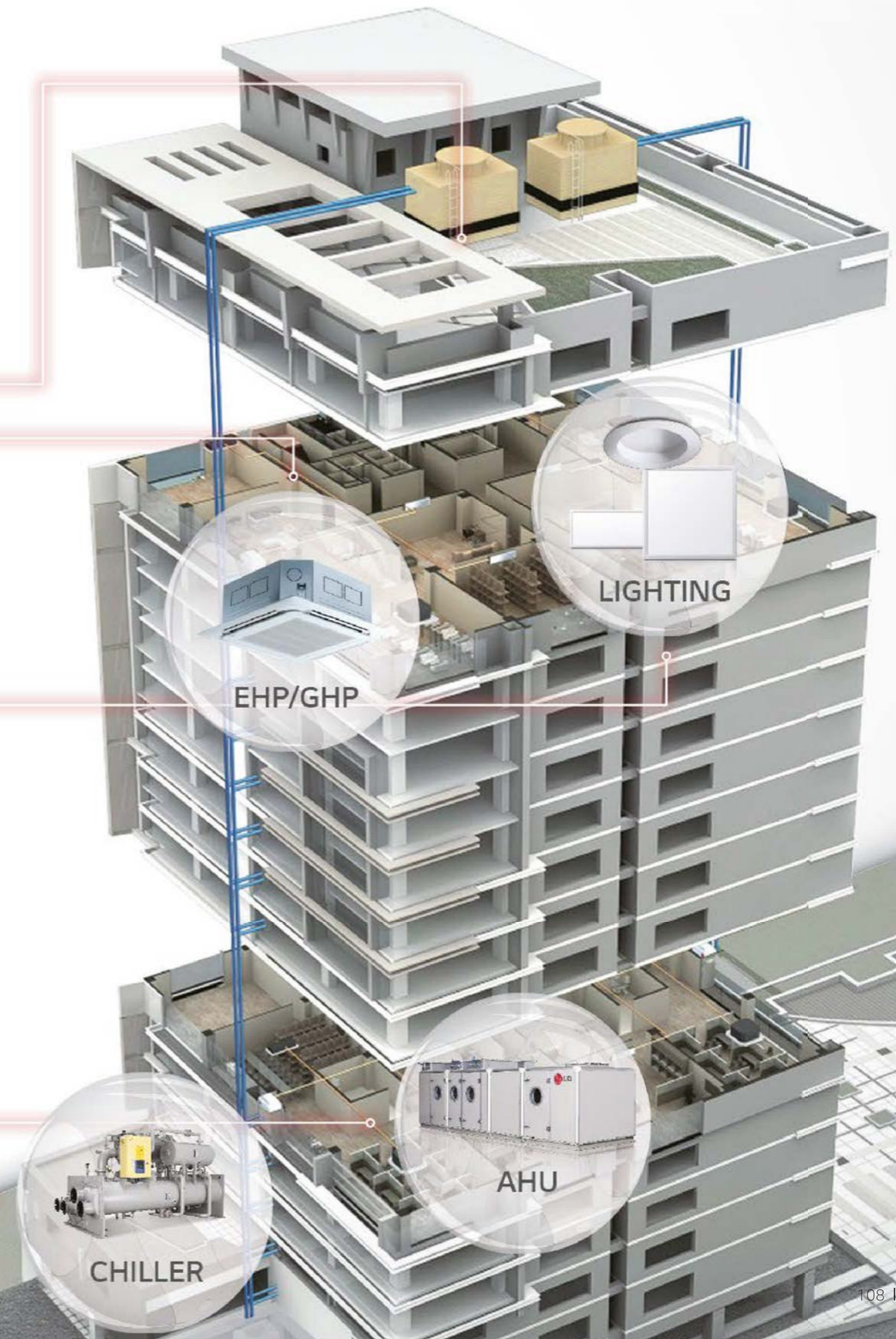
# BECON™ HVAC solution



## Thorough Control of the Entire Building BECON™ Controller

### BECON Controller

This high performance direct digital control device is the core element of the BECON Building Solution that manages control points throughout the building. Since the energy logics are embedded and the module structure is expandable according to the size of the building, you can control any type of building.



Seamless Building Equipment Control

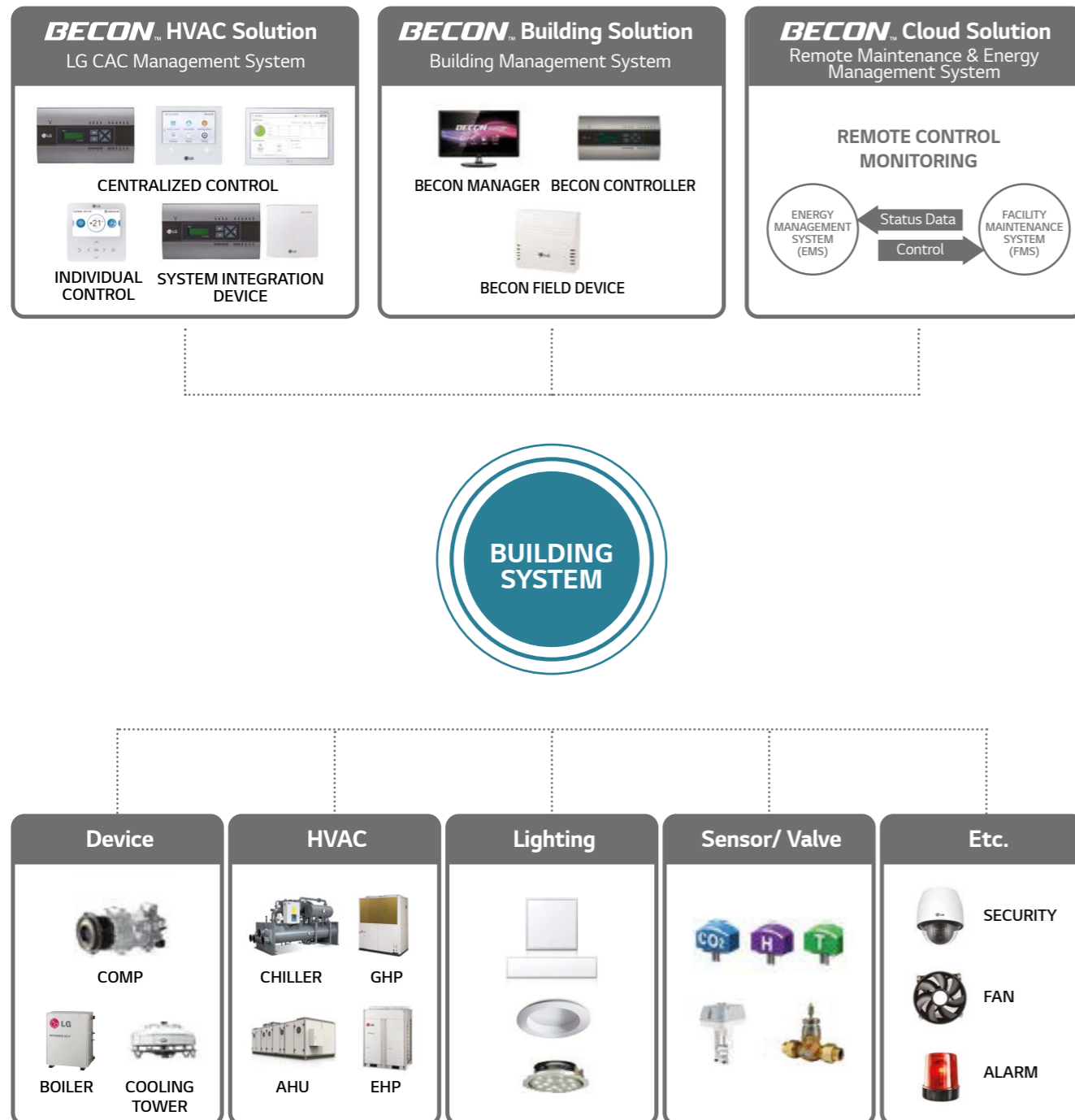
Economical Controller customized any type of the building

# BECON™ HVAC solution

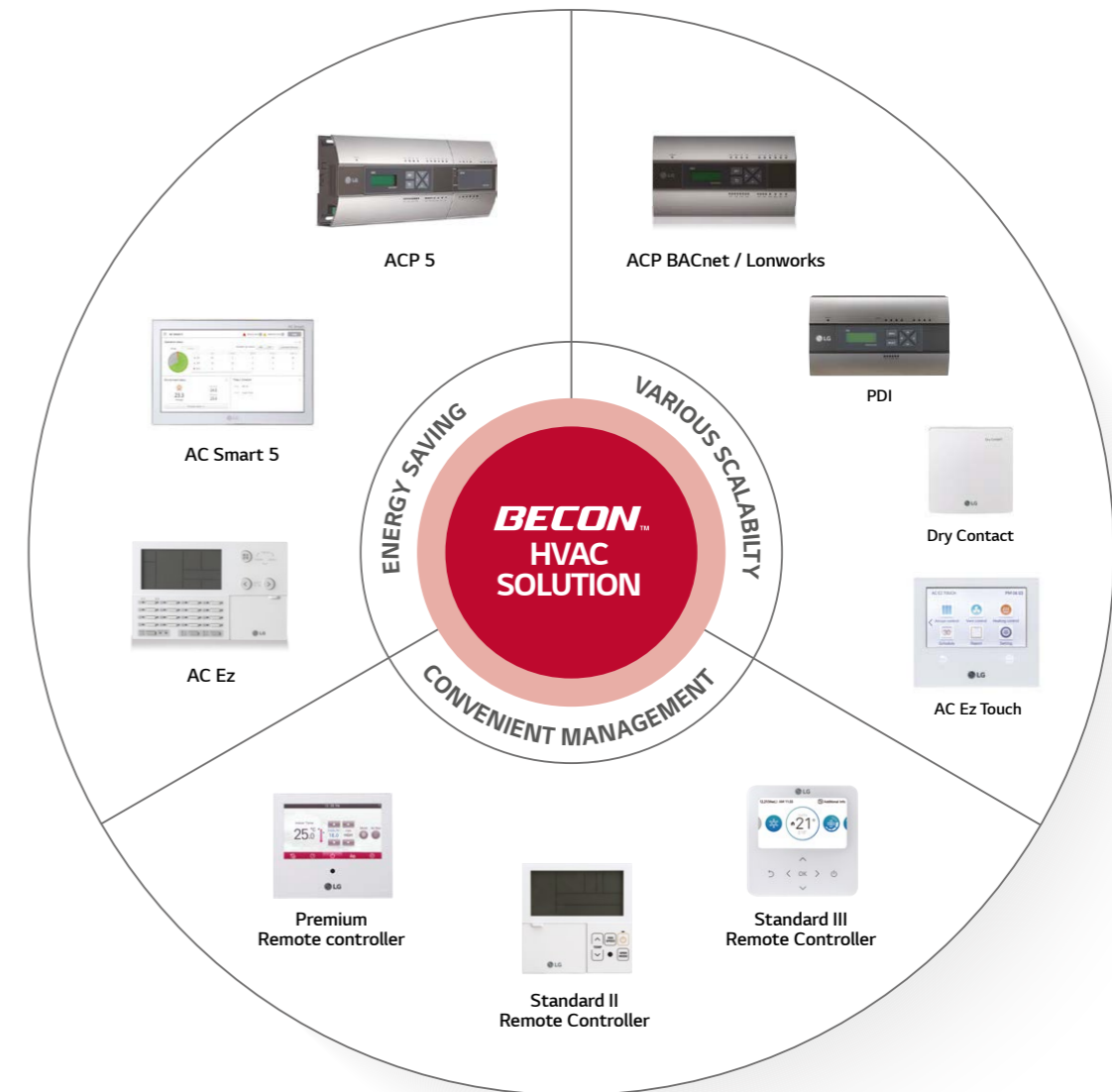


## Composition of BECON™ HVAC Solution

### Product Range



### Product Range BECON HVAC Solution



**ENERGY SAVING**  
Peak control, electricity savings by monitoring schedule and energy



**CONVENIENT MANAGEMENT**  
Easy access and convenient use



**VARIOUS SCALABILITY**  
Control LG HVAC product and 3<sup>rd</sup> party product by Dry contact, IO module, BACnet, Lonworks etc.

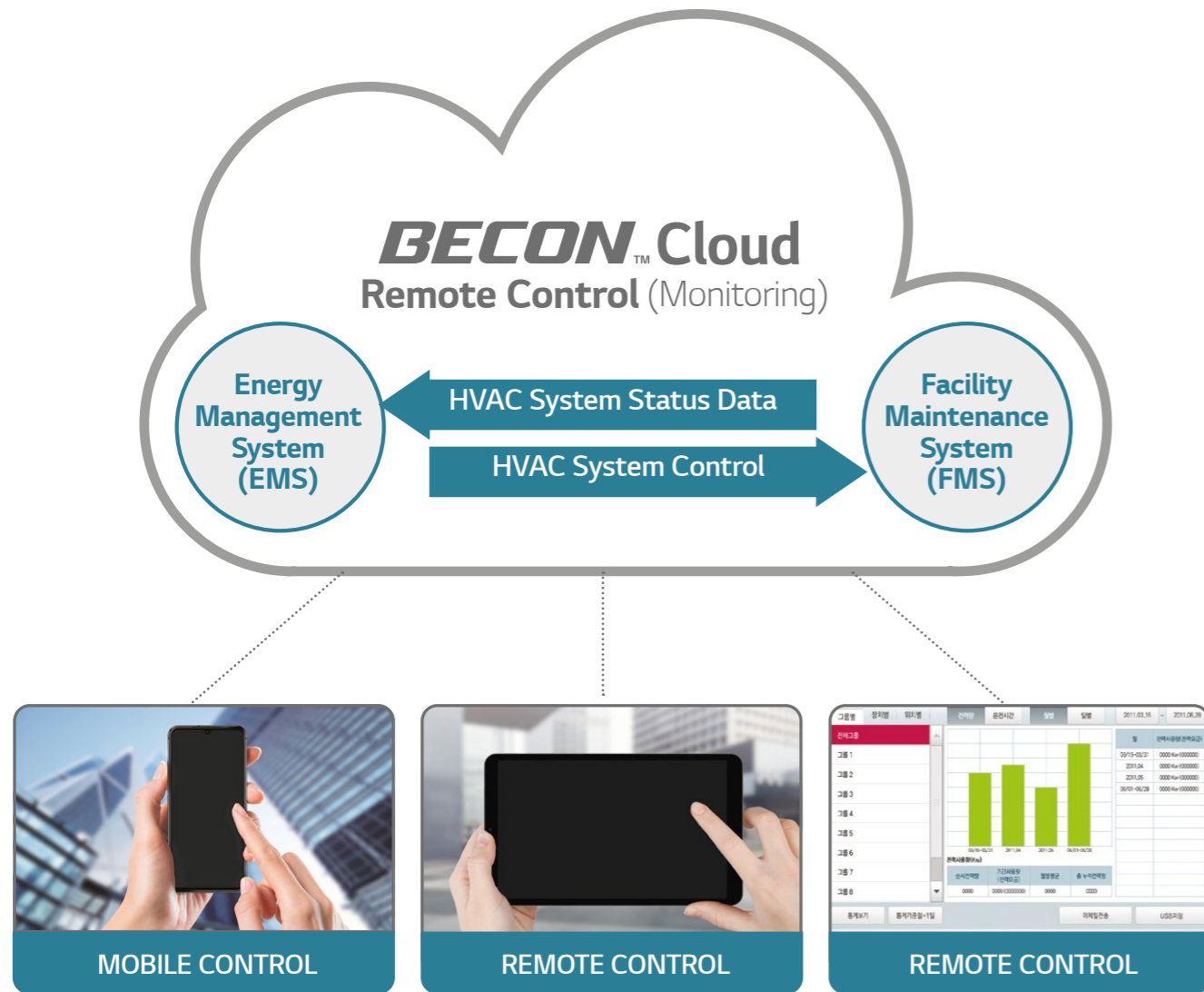


# BECON™ HVAC solution



## Composition of BECON™ CLOUD

Remote Integration Management Solution Based on Cloud



### Customer Value

Quick and convenient HVAC services are offered through total remote maintenance solution.



**SPEED**

User inconvenience is minimized by guaranteeing on-site visit within 12 hours



**ECONOMY**

Service cost is reduced with remote maintenance. Energy is saved with optimized efficiency and energy logic



**CONVENIENCE**

Air conditioners are remotely managed or controlled from anywhere, anytime



**PLEASANTNESS**

Healthy interior conditions are secured 365 days a year through complete cleaning overhaul



HIGH QUALITY HVAC SERVICE & MAINTENANCE

# SERVICE APPLIES



The manufacturer provides the service directly to LG's overall system and it's parts of air conditioning products.

With unique technology and solutions, LG Electronics is expanding it's position with constant research, technology development and technology exchange for optimum heating and cooling solutions.

We provides optimal HVAC total solution service for various customer needs and installation requirements from individual air-conditioning to central air-conditioning.

From central HVAC to individual HVAC, we offer various and differentiated service management for each product. We are able to respond to various customer's needs accurately and quickly by establishing technical cooperation with LG Electronics Research Center, developing professional engineers through expert technical prestige system, analyzing product performance S / W and equipment system.

The manufacturer provides the service directly to LG's overall system of air-conditioning products.

From parts supply to cleaning, LG Electronics' total HVAC system is directly provided by the manufacturer.

Engineering services based on R & D and engineering

We remove proven high-quality technical services through engineers that are given regular technical trainings.

Accurate and rapid process using smart diagnostic kit

We analyze data with professional diagnostic equipment the fastest and the most efficient service when trouble occurs.

Remote maintenance service based on BECON cloud

ICT based remote maintenance systems enable real-time remote management and control and maintenance services.

**CHILLER**

Large building and industrial central HVAC system

- Centrifugal chiller
- Water-cooled screw chiller
- Air-cooled screw chiller
- Inverter scroll chiller
- Absorption chiller

**MULTI V™**

System air conditioner for medium and large buildings

- MULTI V SUPER 5
- MULTI V SUPER IV
- MULTI V SPACE III
- MULTI V S
- MULTI V WATER IV
- MULTI V GEO

**MATERIALS SALES**

Sales of materials and parts

- Piping / Insulation / Electrical Materials
- Outdoor unit efficiency guide
- Wind guide

HIGH QUALITY HVAC SERVICE & MAINTENANCE

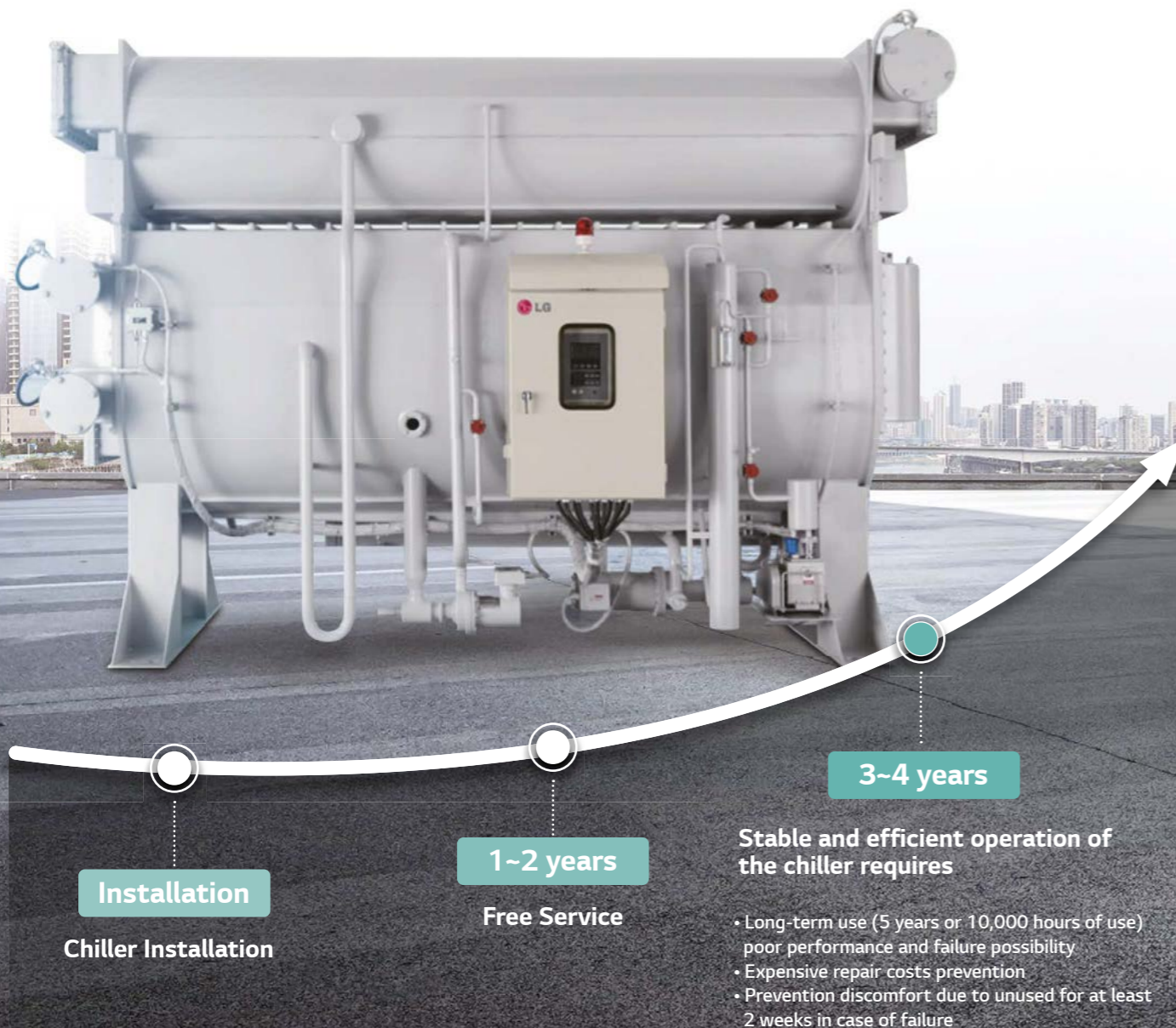
# CHILLER SERVICE & MAINTENANCE



If the chiller is used for a long time, its performance will degrade and lead to poor durability. In the event of faults, Not only does it cost high, but it also takes at least two weeks to repair, so regular maintenance and diagnostics are essential to maintain the performance of the chiller and reduce cost.

## Compressor Overhaul Features

By preventing compressor overload operation, it is possible to prevent secondary accident and wastage of electric power consumption by normalizing performance of the equipment.



Secondary accident prevention by replacing, check of each important parts



Increase durability of equipment by normalizing compressor function

Improve performance by normalizing compressor impeller function



Improved performance minimize cost loss due to waste of energy

Emergency dispatch in case of accident (at periodic inspection contract)



SVC action within 24 hours service in high season / within 12 hours in low season

Chiller operation management consulting and training



Increase management efficiency by implementing product structure and operation management training

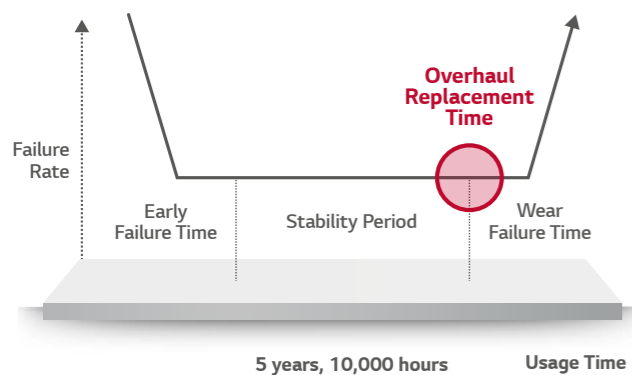
# CHILLER SERVICE & MAINTENANCE



## Necessity of compressor overhaul

Equipment that has been used for a long time may have insufficient motor insulation or wear of rotating parts may be caused by secondary products due to oil deterioration, carbonization, etc, thus performing overhaul operations to prevent secondary accidents prevent energy wastage and cost loss.

Service Provided Directly by The Manufacturer	Performance And durability Degradation	Decreased Manageability
<ul style="list-style-type: none"> <li>• Secondary accident caused by major parts wear of compressor</li> <li>• It takes about 30 days to repair so the equipment can not be started</li> <li>• In the event of a failure, the repair amount is higher than the repair cost</li> </ul>	<ul style="list-style-type: none"> <li>• Aging of equipment due to wear of core parts</li> <li>• Inefficient operation of chiller due to poor compression capacity</li> <li>• Energy waste and cost loss due to inefficient operation of chiller</li> </ul>	<ul style="list-style-type: none"> <li>• Major accidents such as not being able to operate equipment in case of secondary accident</li> <li>• Large claim occurrence and long time requirement in case of failure</li> <li>• Difficulty in planning an annual budget for replacement parts</li> </ul>



Bearing part wear



Impeller wear



Pinion shaft wear

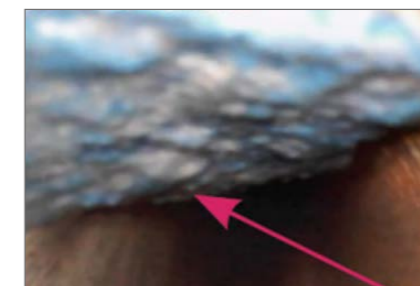
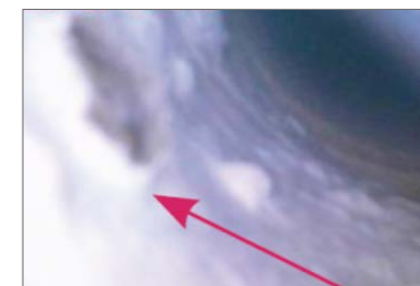
## Necessity of tube cleaning

Contaminants in chiller heat pipes are the main cause of deterioration of efficiency and corrosion and rupture, pollutant removal is required by regular tube cleaning.

Fuel Consumption	Cooling Capacity	Tube Cleaning Services Cooling Capacity/ Fuel Consumption
<p>(Unit: Won)</p> <p>Rating: 100 won, Scale 0.6mm: 125 won</p>	<p>(Unit: %)</p> <p>Rating: 100%, Scale 0.6mm: 75%</p>	<ul style="list-style-type: none"> <li>• Contaminants in chiller heat pipes are the main cause of deterioration of efficiency and corrosion and rupture, pollutant removal is required by regular tube cleaning.</li> <li>• The thicker the scale, the lower the cooling capacity</li> <li>• The Higher the scale, the higher the fuel consumption</li> </ul> <p>Refrigerant Chamber Temperature</p> <p>Cooling Water Outlet Temperature</p> <p>Power Consumption</p> <p>Operating Time</p>

## Heat transfer pipe pollution photo

Scale generation in the heat transfer pipe of a heat exchanger can result in significant energy wastage due to the heat transfer pipe frozen and performance degradation.



# HIGH QUALITY HVAC SERVICE & MAINTENANCE

## CHILLER SERVICE & MAINTENANCE



### Tube cleaning methods and features

Tube cleaning can be performed in two ways-mechanical and chemical cleaning. It is done based on the quality of cooling water and the internal scale of the heat transfer pipe, which is removed with LG authorized tube cleaning.

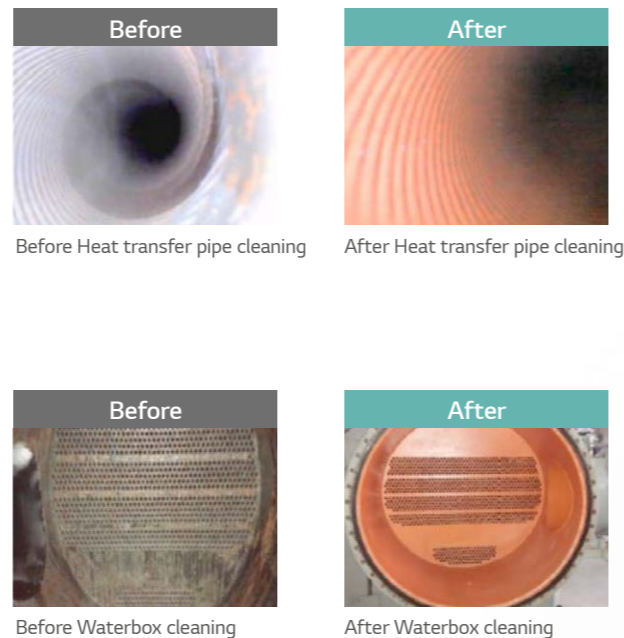
#### Tube Cleaning Method Per Product

- Mechanical cleaning :**  
 Customized method for site with good cooling water quality
- Chemical cleaning :**  
 If the water quality of the cooling water is not good or the contamination inside the heat transfer pipe is severe
- Mechanical and chemical cleaning :**  
 If the quality of the cooling water is poor or the inside of the heat transfer pipe is very polluted

Classification	Chemical cleaning	Mechanical cleaning	mechanical / chemical	Total
Absorption	80%	10%	10%	100%
Screw	10%	10%	80%	100%
Turbo	10%	10%	80%	100%

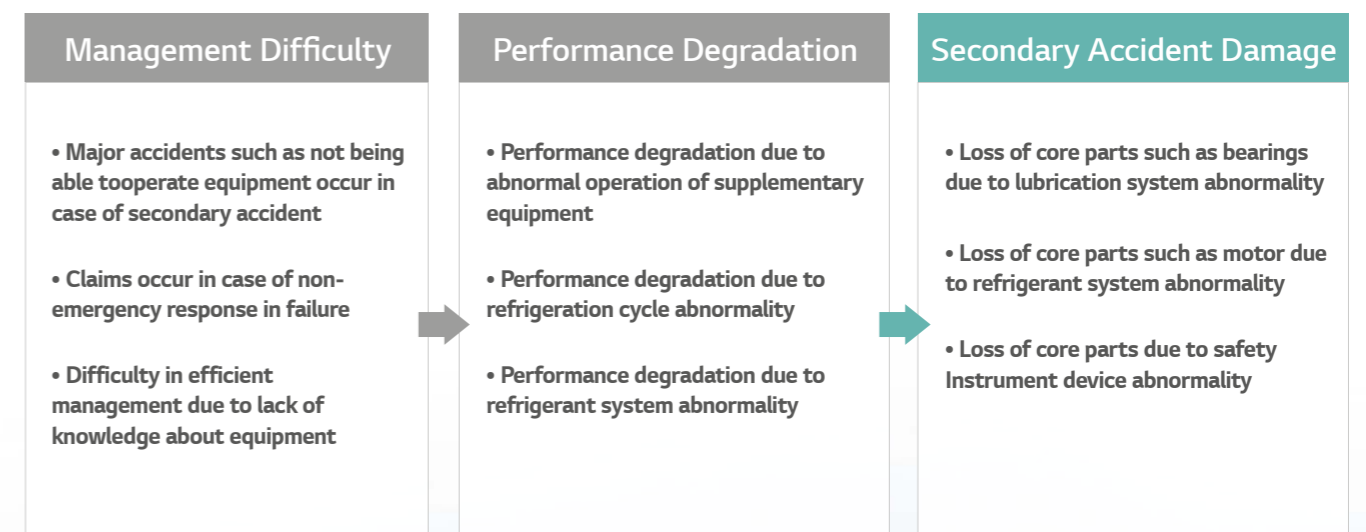
- Prevention waste of electric energy by increasing heat exchange efficiency
- Prevention of secondary accident by preventing compressor overload operation
- Prevention of secondary accident such as bearing by preventing oil temperature rise

#### Before Cleaning / After Cleaning



### Necessity of regular check

After the product is installed, it can be costly due to secondary accidents and performance degradation depending on the installation environment, usage habits and inspection level. Therefore, periodic inspection is necessary after commissioning to ensure durability, efficiency and prevent damage to core components.



# CHILLER SERVICE & MAINTENANCE



## Features of Periodic Check

By regularly checking the chiller whether it is economical and reliable, and it is possible to improve the COP by preventing secondary accident.

<p>Service provided directly by the manufacturer</p> <p>Secondary accident prevention of core parts such as compression bearings and motors</p>	<p>Blocking cause item of refrigerator COP degradation</p> <p>Prevent waste of energy by normalizing cooling cycle</p>
<p>Emergency action in case of an accident</p> <p>SVC action within 24 hours service high season / within 12 hours in low season</p>	<p>Chiller operation management consulting and training</p> <p>Increase management efficiency by implementing product structure and operation management training</p>

## Regular Check Items

Monthly regular and diverse professional inspections prevent product failure and maintain performance.

Classification	Product List	Necessity and Expected Effect
General Inspection	<b>Operation data check</b>	Check refrigeration cycle, various sensor values normal status, condenser scale, refrigerant leakage, etc
	<b>Appearance check of equipment</b>	Check product appearance damage, oil leaks and refrigerant leaks
	<b>Vibration check</b>	Check bearing condition and balancing of rotor
	<b>Lubrication system check</b>	Oil condition and bearing temperature check (prediction) to prevent secondary core component failure
	<b>Partial refrigerant cooling system check</b>	Check oil cooler, dry filter abnormality check
	<b>Noise check</b>	Rotor balancing and bearing status, impeller wear status check
	<b>Impeller check</b>	Visual check of the impeller (* IGV opened) to prevent failure of compressor core parts
	<b>*IGV operation status</b>	Check whether capacity control device is normal through electrical and manual check
	<b>Refrigerant pressure check</b>	Check whether there is proper refrigerant amount and refrigerant leakage
Differentiation	<b>Report provide</b>	Check bearing condition and balancing of rotor
	<b>Emergency service response</b>	Periodic check reports and maintenance Binder provided
	<b>Additional facilities check</b>	Action in 12 hours in low season / in 24 hours in high season
	<b>Energy diagnosis</b>	Check pump, header, cooling tower, air conditioner, diffuser, etc
		Provides current performance measurement and consultation relative to chiller rating

\*IGV: Inlet Guide Vane

## Preventive Maintenance Features

Chiller Major replacement parts must be replaced after a certain period of time to ensure stability and performance through the preventive maintenance.

<p>Prevent secondary accidents by replacing each important part and check</p> <p>Secondary accident prevention of core parts such as compression bearings and motors</p>	<p>Increased performance by COP affected parts replacement and check</p> <p>Prevent waste of energy by normalizing cooling cycle</p>
<p>Emergency action in case of accident (under periodic check contract)</p> <p>SVC action within 24 hours service in high season / within 12 hours in low season</p>	<p>Chiller operation management consulting and training</p> <p>Increase management efficiency by implementing product structure and operation management training</p>

## Preventive Maintenance Item

Monthly regular and diverse professional inspections prevent product failure and maintain performance.

Classification	Product List	Necessity and Expected Effect	
General Inspection	<b>Oil replace</b>	Prevention of secondary accidents of core parts by preventing oil carbonization	
	<b>Oil filter replace</b>	Debris in the body accumulates in the filter, requiring periodic replacement (Oil circulation is not good)	
	<b>Refrigerant filter replace</b>	If the refrigerant filter is clogged, it will cause poor performance due to poor oil recovery and prevent secondary accident (Flooded chillers)	
	<b>Safety check</b>	As a national recommendation, it should be done once / year and check whether the safety valve is operating normally	
	<b>Compressor motor coil insulation</b>	If the inner coil insulation of the compressor is broken, it can not be operated and can lead to secondary accidents.	
	<b>Refrigerant leak test</b>	Leakage of refrigerant may cause deterioration of performance as well as motor temperature may rise and lead to secondary accident	
	<b>Each part safety device</b>	Secondary accidents(Compressor, frozen, etc.) may occur when the microcomputer setting value do not work properly	
	<b>Oil heater replace</b>	Maintain oil temperature within normal range to prevent secondary accidents	
	Differentiation	<b>Operation Management Training</b>	Production factory tour (product manufacturing process training, operation management training, etc.)Training execution (regular inspection + maintenance site)
		<b>Energy Diagnosis</b>	Provide current performance measurement and precision diagnosis and consultation with the rated performance of the chiller(regular inspection + maintenance site)
<b>Operation Data Analysis</b>		Operational data can be analyzed and diagnosed for up to one year in the past through USB only for LG	
<b>LG MV</b>		Precise diagnosis possible with refrigerated cycle check tool only for LG	

# MULTI V SERVICE & MAINTENANCE



## Necessity of Multi V Maintenance

We provide services to manage products conveniently through \*ICT-based total HVAC maintenance system. This saves energy and we achieve customer's satisfaction by maintaining product performance, managing efficiency and promptly responding to faults.

Repair costs reduction	Energy saving	Repair time reduction	Failure rate decline
<ul style="list-style-type: none"> <li>You can save the repair cost up to 30% compared to general A / S field</li> </ul> <p>1. Target: The contract has been in progress for more than 2 years 2. Number: 239 3. Amount basis : Material Consumption cost / 1</p>	<ul style="list-style-type: none"> <li>Efficient device management and EMS control logic enable energy savings.</li> </ul> <p>D University EMS Electricity Fee Saving Case</p>	<ul style="list-style-type: none"> <li>Emote diagnostics improves service processing speed, enabling service on the day even in high season.</li> </ul> <p>Year 14 failure processing speed 1. Target: Normal SVC field, AMC field 2. Complete enumeration</p>	<ul style="list-style-type: none"> <li>Real-time failure notice and pre-checks reduce the failure occurrence</li> </ul> <p>- Normal SVC field failure cost - Online Maintenance Field Failure cost</p>

## Cleaning Service

Fungi and germs that are harmful to the human body are likely to accumulate inside the air conditioner. If it is not cleaned and managed for a long time, it will accumulate pollutants, which may lead to lower cooling efficiency and cause disease thus regular cleaning from a professional is essential.

Systematic professional cleaning service	Use advanced equipment by professional engineers	Eco-friendly chemical cleaning
<ul style="list-style-type: none"> <li>Systematic cleaning based on differentiated complete decomposition process</li> </ul>	<ul style="list-style-type: none"> <li>High-pressure, 40°C hot water washing by engineers who have completed the regular program</li> </ul>	<ul style="list-style-type: none"> <li>Use of eco-friendly chemical that have been recognized for their excellent performance in response to contamination</li> </ul>

### Benefits of cleaning service

<p><b>Cooling and heating efficiency</b> Maintains performance and efficiency by removing accumulated pollutants</p>	<p><b>Air quality improvement</b> Provides pleasant indoor environment by removing pollutants</p>	<p><b>Product life extension</b> Prevents product failure due to pollutants</p>
--	---	---

## Multi V Maintenance Package

Diverse and professional maintenance product makes continuous product improvement activities and performance better.

			Offline Maintenance package			Online + Offline Maintenance package		
			G1	G2	G3	T1	T2	T3
Service Special Contract	<b>Report offer</b>	Provide reports on the check results, product durability enhancement by status understanding and improvement work on product	●	●	●	●	●	●
	<b>Emergency Action</b>	Emergency action first in service receipt	●	●	●	●	●	●
	<b>Remote check</b>	Data collection and improvement work proposal with remote check technology to prevent product failure and enhance durability				●	●	
	<b>Remote control</b>	Control anytime, anywhere in an internet-enabled environment				●	●	
	<b>Energy management</b>	Unlike the existing simple on / off control technology, it has the comfort-based control technology to reduce power consumption				●	●	
	<b>Automatic reception</b>	Automatic reception in case of a failure through the real-time monitoring				●	●	
	<b>Regular check (year / twice)</b>	Provision of the equipment pre-inspection services before high season	●	●	●	●	●	●
Guarantee Coverage	<b>Free travel service</b>	Inv. RAC Troubleshooting	●	●	●	●	●	●
	<b>Free repair service</b>	Chiller Troubleshooting	●	●	●	●	●	●
	<b>Material cost free (excluding Comp)</b>	AC Controls Installation		●	●	●		●
	<b>Material cost free (including Comp)</b>	AHU Installation				●	●	

# BECON CLOUD SERVICE



## BECON Cloud Service

The BECON Cloud system, which manages all areas from remote management to control and maintenance, is able to monitor in real time anytime and anywhere, so it is easy to prevent malfunctions and offers optimal product management solutions such as excellent energy saving, differentiated service and consulting.



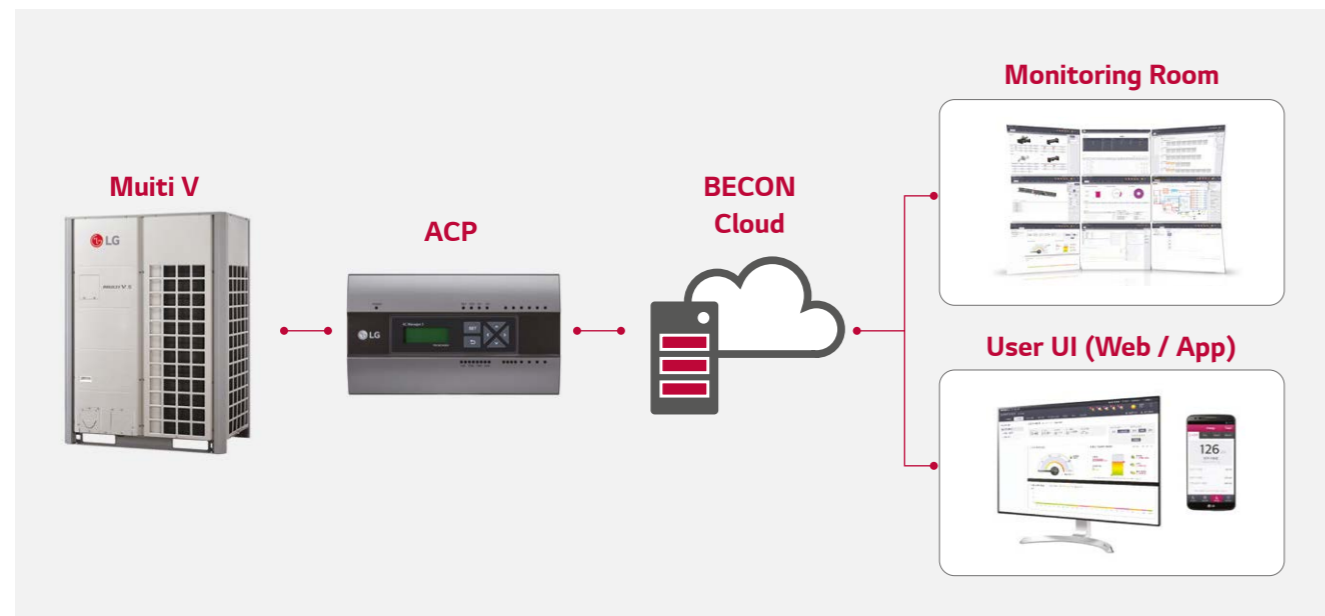
01 Block Diagram

02 Main Function

03 Customer offering Value

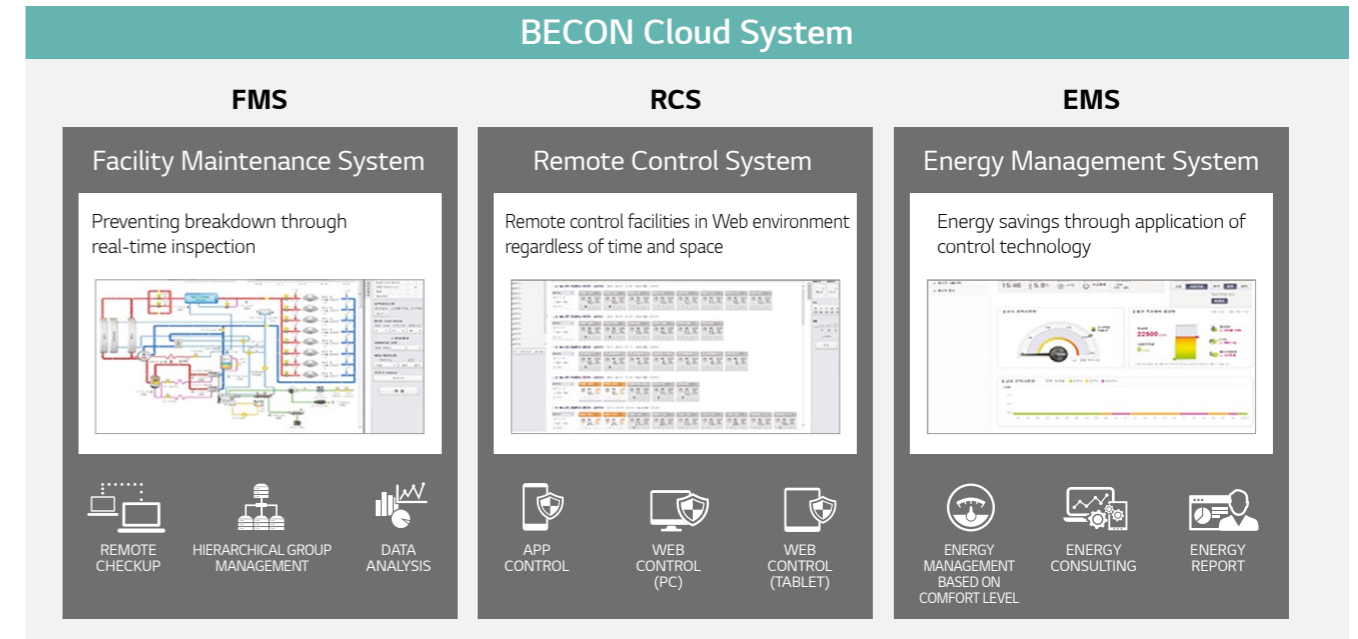
## BECON Cloud Block Diagram

ICT-based comprehensive HVAC management system that provides energy savings through remote systems as well as convenient management is total HVAC management solution.



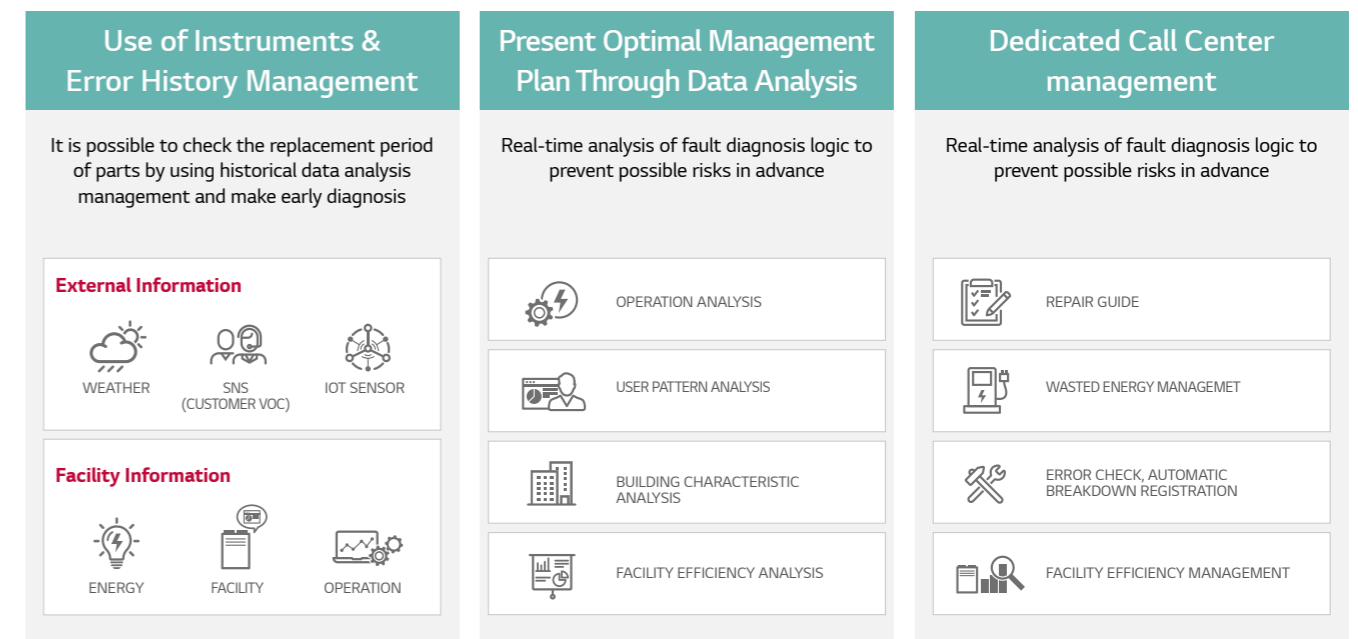
## BECON Cloud System

BECON Cloud consists of Facility Maintenance System(FMS), Remote Control System(RCS), Energy Management System(EMS).



## Customer Offering Value

Device usage and error history can be managed through systematic and efficient management, Data analysis can prevent possible risks beforehand, and the chiller can be checked regularly every month to prevent malfunctions and maintain performance.







# LG INNOVATION IN ACTION

## Our complete solution at a glance

From efficient, premium-designed solar modules on the roof to a smart energy storage system on the ground floor. The LG Smart Home Energy Package can be perfectly integrated into all types of houses. Produce your own energy from renewable resources, store it in the battery or water tank, and enjoy a comfortable and sustainable home while cutting your electricity bills comfortably and sustainably.

1



PV Solar Modules

2

Energy Storage  
System (ESS)

3

Air-to-Water Heat Pump  
(AWHP)

# LG SMART HOME ENERGY PACKAGE



## LG SMART HOME ENERGY PACKAGE IN EVERYDAY LIFE



### 1:00 pm:

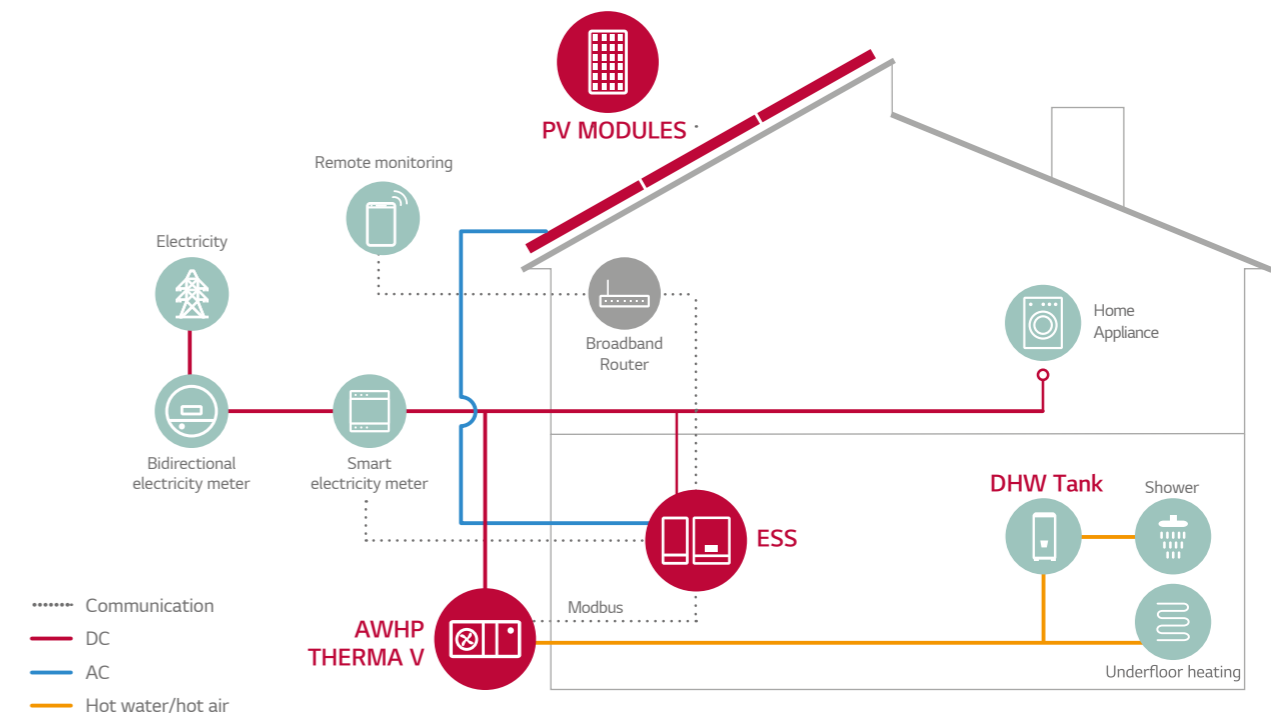
- The sun is shining brightly.
- LG PV modules are generating electricity at maximum capacity under the bright sun.
- Almost no one is at home, so the electricity consumption is very low.
- Excess electricity is charging the LG ESS system.



### 3:00 pm:

- The battery is now fully charged.
- But home energy consumption is still at minimal.
- Home owner can sell the electricity back to the grid.
- but LG Smart Home Energy Package has a better plan.
- It automatically routes the excess electricity to the LG Air-to-Water Heat Pump, filling up hot water tank.

### LG SMART HOME ENERGY PACKAGE DIAGRAM



### 6:00 pm:

- Power consumption increases rapidly in the evening. At the same time, the power produced by the photovoltaic system gradually decreases with the sunset.
- The photovoltaic system can no longer meet the electricity demand in the house.
- Now the LG ESS system provides the stored electricity to power other devices.
- In the DHW (Domestic Hot Water) tank, hot water is ready to be used.

# LG SMART HOME ENERGY PACKAGE



## ONE SYSTEM, MANY BENEFITS

LG's innovative Smart Home Energy Package is an integrated, stand-alone system equally suitable for newbuild and renovation projects which offers you the most efficient, eco-friendly and reliable solution for your customers.

Because the system already includes all the main products, it will make your life easier by eliminating the time-consuming, expensive search for compatible components and allowing you an easier installation and ordering process.

In addition, your customers will benefit from long warranty periods, the high-quality build of all components, and service commitment from a company with a 60-year history.

### The main advantages for your customers

- Energy-efficient, cost-saving solution (low waste/less electricity consumption)
- Generating your own electricity and heating means reduced vulnerability to rising energy costs
- Eco-friendly: Reduced CO2 footprint compared to conventional power sources
- Reliable: Industry-leading warranty periods, high-quality products, first class service
- All-integrated: Whole package managed by the same customer service team

### The main advantages for you

- All-integrated: One-stop shopping for all your components – eliminate the time and hassle of dealing with multiple suppliers – one contract/ one contact point; easier installation
- Reliability: Associate yourself with LG, a globally renowned brand with over 60 years' experience; benefit from long warranty periods and dedicated customer service
- LG offers a wider product portfolio than any other company, you to offer your customers a choice to meet their individual needs
- Customizable for different type of houses Partnering with LG will increase your opportunities to meet the growing customer demand for energy-efficient home solutions and for you to offer your customers a choice to meet their individual needs

PV Solar module



LG NeON<sup>2</sup> Black

Energy Storage System (ESS)



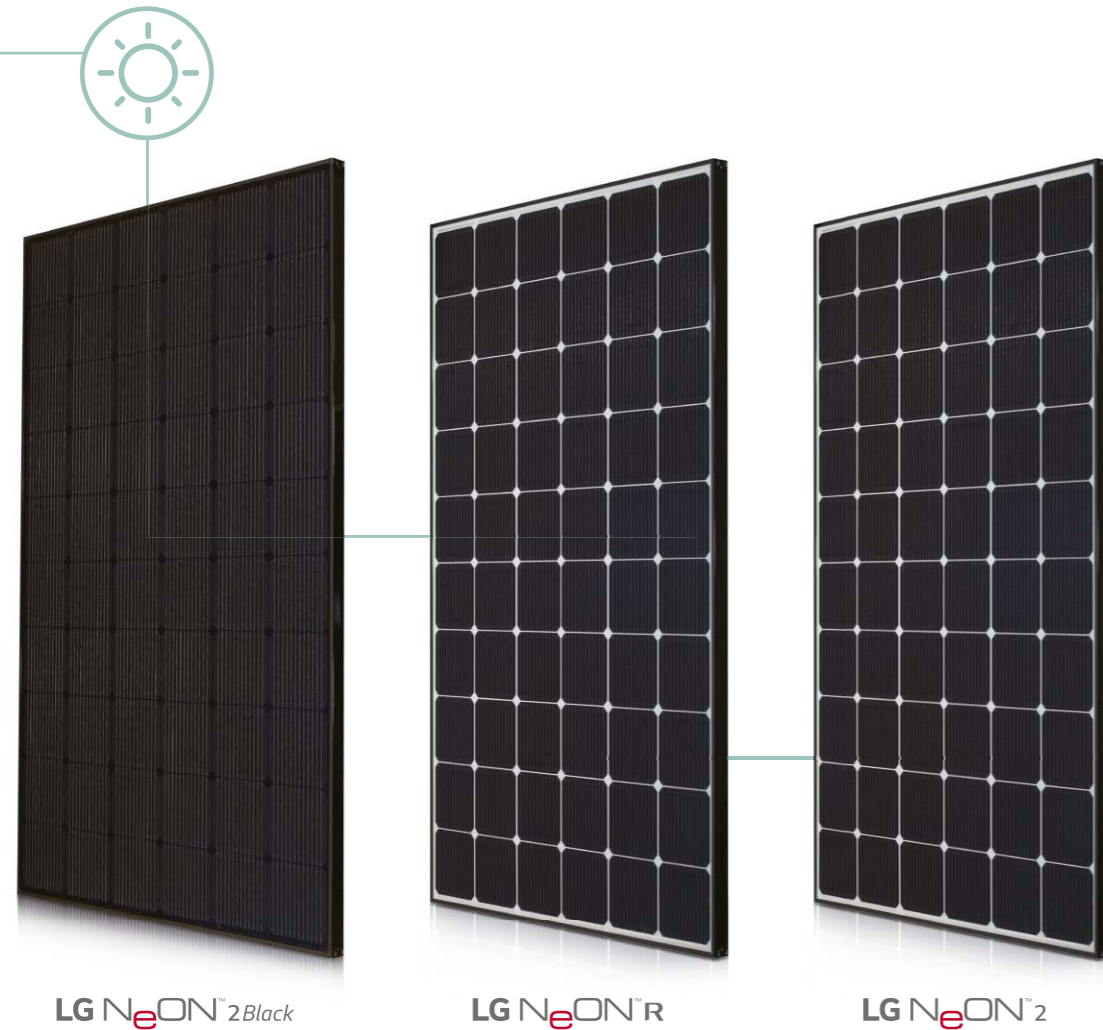
PCS

Battery

Air-to-Water Heat Pump (AWHP)



THERMA V R32 Monobloc



## LG PV SOLAR MODULES

### Timeless design meets advanced technology

LG offers a wide range of high-performance solar modules for virtually any application. They are highly efficient, delivering better performance within the available space on your roof. Our solar modules offer outstanding durability and undergo intensive testing, minimizing the risk of defects. In addition, an industry-leading warranty of 25 years is offered. LG modules have been designed with aesthetics in mind, enhancing any roof's appearance and increasing the value of the building.

- 25-year warranty
- Highly efficient
- Better performance per square metre
- Premium black design
- Outstanding durability (able to withstand high pressures)



## LG ENERGY LG ESS SOLUTION

### Enjoy solar energy even after sunset

The LG Energy Storage System (ESS) means you can offer your customers a complete smart solution for energy-efficient homes by allowing the storage of solar-generated electricity for maximized self-consumption any time day or night. Our ESS converts power extremely efficiently, generating three-phase AC power without the risk of unbalanced loads occurring. And thanks to 24-hour web monitoring, the status of the ESS can be checked anytime, anywhere.

- 10-year warranty
- Compact plug & play system
- DC-coupled & 3-phase system
- Battery capacity expansion
- 24h web monitoring





# LG AIR-TO-WATER HEAT PUMP

## Perfect indoor climate in every season

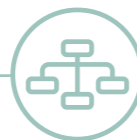
The LG THERMA V makes your home warmer and more comfortable. It provides a greener heating solution thanks to its revolutionary scroll compressor and R32 refrigerant. This Air-to-Water Heat pump system uses electricity for only 25% of

its energy needs, obtaining the remaining 75% from naturally occurring air source heat. It works reliably even in extremely cold temperatures down to  $-25^{\circ}\text{C}$  and delivers water with a maximum outlet temperature of  $65^{\circ}\text{C}$ .

- Energy and cost saving
- Excellent performance even at low ambient temperatures (extremely reliable down to  $-25^{\circ}\text{C}$ )
- Flexible design and easy installation
- Low noise level of only 52 dB (A)
- Lower global warming potential (GWP) through the use of the new refrigerant R32
- Remote control via Android and iOS smartphone with The LG ThinQ App



THERMA V R32 Monobloc





# OUR SERVICE, YOUR SUCCESS

Working with LG means having a strong, reliable partner at your side every day. Our long-term expertise in all relevant fields solar, energy storage and air conditioning combined with an extensive range of services is the ideal way to add value to your business.

## LG Electronics Business Solutions

We offer professional solutions in air solutions, solar power and information display. As a leader in B2B innovation, LG Electronics Business Solutions aims to provide comprehensive solutions including consultancy, installation, maintenance and support in collaboration with its professional business partners. LG Business Solutions Europe is located at the LG Electronics European Headquarters in Eschborn, Germany, with additional offices throughout Europe.

## LG Academy

Our new LG Academy is located in Eschborn, Germany. We offer training courses and certification programmes with full support and service. And we'll also be delighted to help you regarding individual requests and requirements.

## Want to learn more?

Please visit [www.lg.com/global/business](http://www.lg.com/global/business) or contact us at [eu.b2b@lge.com](mailto:eu.b2b@lge.com) for further information.



3

# PRODUCTS

## PRODUCTS

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# ROUND CASSETTE



## Good Design adds Elegance and Class to your space

Sense that stands out in any interior.  
A body design that naturally fits your space, adding class to your style.



### Features & Benefits

- Luxury round design can make a luxurious space with a round design considering side view.
- Perfect round air flow without blind spots.

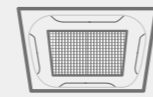
### Key Applications

- Retail
- Restaurant
- Office
- Hotel

Cassette		Single Split	Multi Split	Multi V
Smart	Wi-Fi	0	0	0
Energy Efficiency	Human Detect Sensor	-	-	-
	Drain Pump	0	0	0
	Sleep Mode	0	0	0
Comfort	Timer (On / Off)	0	0	0
	Timer (Weekly)	0	0	0
	Two Thermistor Control	0	0	0
	Group Control	0	0	0



# AIR PURIFICATION CASSETTE



### Features & Benefits

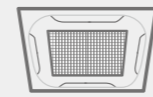
- Convenient managing system
- Power 4 step Air Cleaning
- Air Cleaning Status Display

### Key Applications

- Residential /Dormitory
- Retail
- School
- Office
- Hotel
- Restaurant

Cassette		Single Split	Multi Split	Multi V
Smart	ThinQ App.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Easy Filter Cleaning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfort	PM 1.0 Filter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Air Quality Display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# DUALVane™ CASSETTE



### Features & Benefits

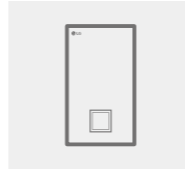
- New dual vane 4 way cassette allows comfortable air flow
- Full 3D Turbo fan decreases air resistance, providing high air flow and low sound levels.

### Key Applications

- Retail
- School
- Office
- Hotel
- Dormitory
- Restaurant

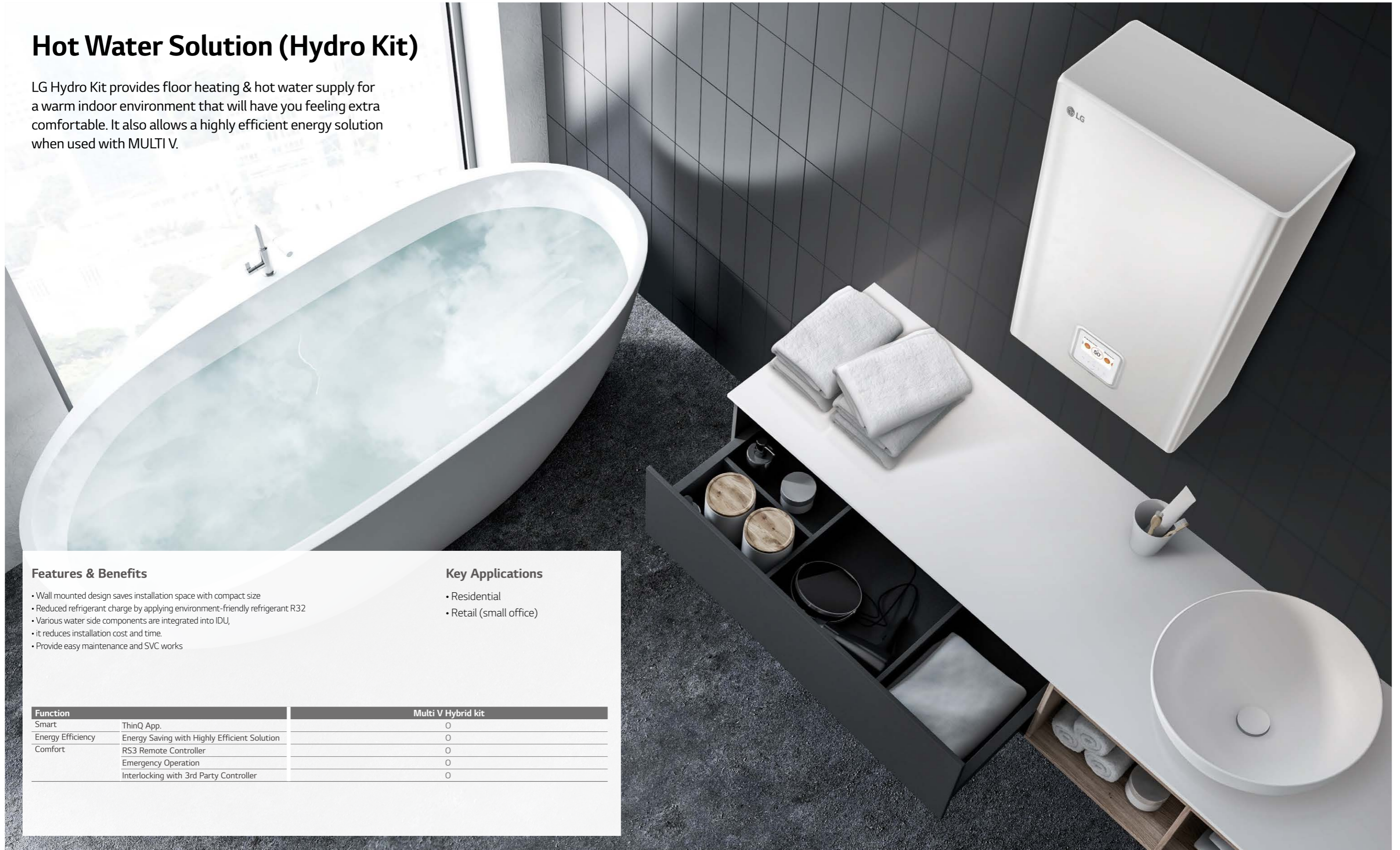
Cassette		Single Split	Multi Split	Multi V
Smart	Wi-Fi	○	○	○
Energy Efficiency	Human Detect Sensor	Optional	Optional	Optional
	Drain Pump	○	○	○
	Sleep Mode	○	○	○
Comfort	Timer (On / Off)	○	○	○
	Timer (Weekly)	○	○	○
	Two Thermistor Control	○	○	○
	Group Control	○	○	○

# WALL MOUNTED HYDRO KIT



## Hot Water Solution (Hydro Kit)

LG Hydro Kit provides floor heating & hot water supply for a warm indoor environment that will have you feeling extra comfortable. It also allows a highly efficient energy solution when used with MULTI V.



### Features & Benefits

- Wall mounted design saves installation space with compact size
- Reduced refrigerant charge by applying environment-friendly refrigerant R32
- Various water side components are integrated into IDU,
- it reduces installation cost and time.
- Provide easy maintenance and SVC works

### Key Applications

- Residential
- Retail (small office)

Function	Multi V Hybrid kit
Smart	ThinQ App.
Energy Efficiency	Energy Saving with Highly Efficient Solution
Comfort	RS3 Remote Controller
	Emergency Operation
	Interlocking with 3rd Party Controller

# MULTI V<sup>™</sup> S R32



# MULTI V<sup>™</sup> S R32

- Air cooled VRF Heat pump & Heat Recovery
- 12.1~33.6kW (Cooling capacity based)
- Both 1Ø, 220~240V, 50Hz and 3Ø, 380~415V, 50Hz
- Side discharge outdoor unit
- Includes the industry's first single phase Heat Recovery system



### Features & Benefits

- High efficiency through technology of revolutionary R1 compressor
- Eco-conscious refrigerants reduce environmental pollution
- Compact size and light weight make it easy to install and optimize space

### Key Applications

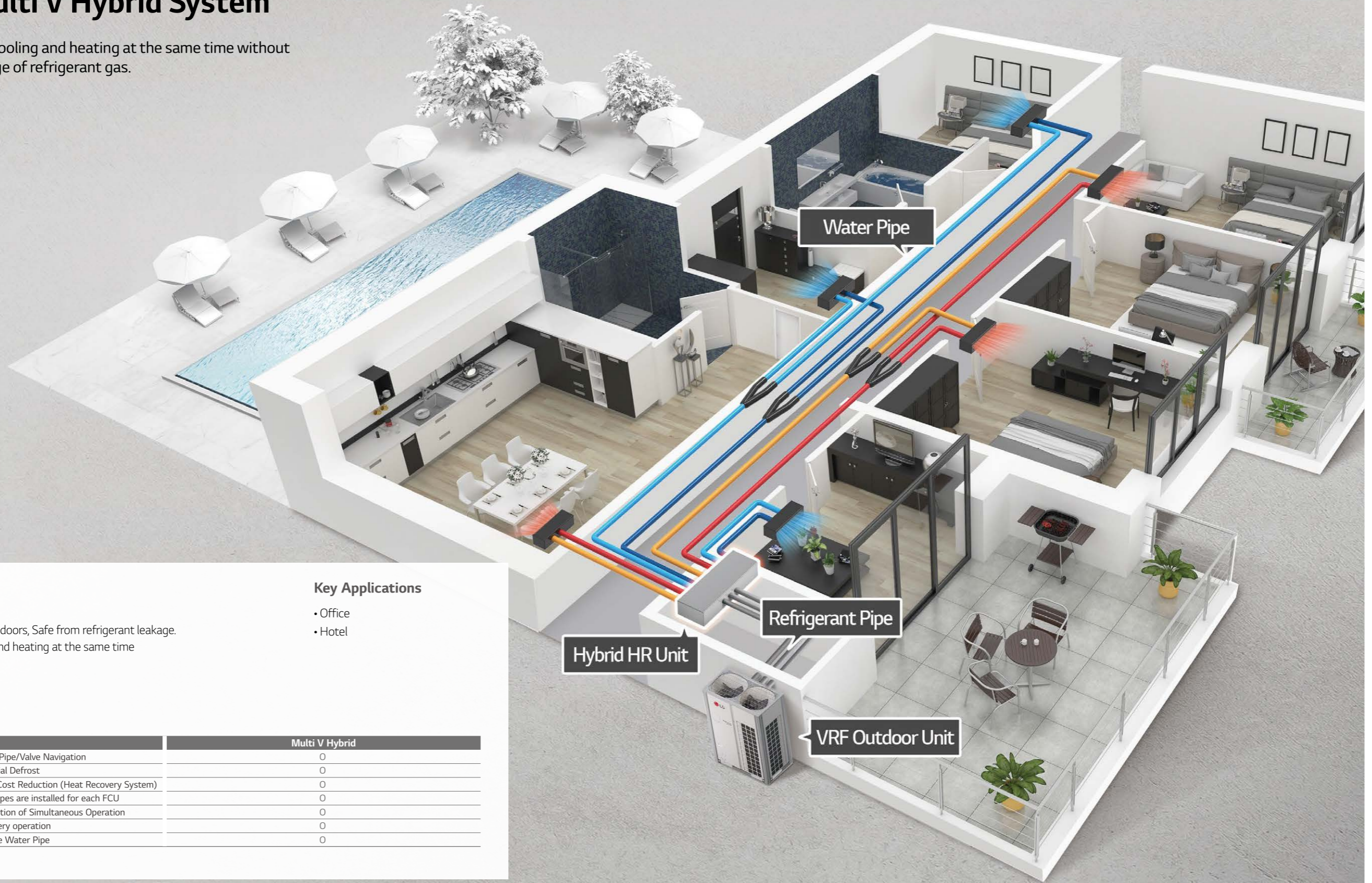
- Retail
- Office

Function	Multi V S
Smart	Smart Load Control <input type="checkbox"/>
Energy Efficiency	Cost saving with R32 (Higher Efficiency, Less Refrigerant) <input type="checkbox"/>
	Less Refrigerant Charge <input type="checkbox"/>
Comfort	Optimal Heat Exchanger <input type="checkbox"/>
	Strong Durability with Corrosion Resistance Black Fin <input type="checkbox"/>
	Low Noise Operation <input type="checkbox"/>



# What is Multi V Hybrid System

Using water enables cooling and heating at the same time without worrying about leakage of refrigerant gas.



### Features & Benefits

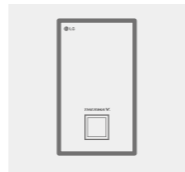
- Save your initial investment
- No refrigerant pipe installed indoors, Safe from refrigerant leakage.
- Using water enables cooling and heating at the same time

### Key Applications

- Office
- Hotel

Function	Multi V Hybrid	
Smart	Automatic Pipe/Valve Navigation	0
	Smart Partial Defrost	0
Energy Efficiency	Operating Cost Reduction (Heat Recovery System)	0
	Only two pipes are installed for each FCU	0
Comfort	Quick Adoption of Simultaneous Operation	0
	Heat recovery operation	0
	Thread Type Water Pipe	0

# R32 HYDROSPLIT



## THERMA V R32 HYDROSPLIT

Convenience meets performance with innovation and safety in mind, the LG Therma V Hydrosplit separates the Indoor unit (IDU) and outdoor unit (ODU), connecting them through water pipes. The unit's heat exchanger is located within the ODU, reducing the risk of indoor refrigerant leakage. Quick and easy installation is made possible by the IDU's built-in hydronic components such as water pump, expansion tank, and air vent as well as the fact that the electric wiring can be done in the same space as the IDU.



### Features & Benefits

- Reducing the risk of indoor refrigerant leakage due to the heat exchanger's location in the outdoor unit
- Wall mounted design saves installation space with compact size
- Reduced refrigerant charge by applying environment-friendly refrigerant R32
- Various water side components are integrated into IDU,
- it reduces installation cost and time.
- Provide easy maintenance and SVC works

### Key Applications

- Residential
- Retail (small office)

Function		Therma V
Smart	Enhanced Energy Information (Power consumption against target)	0
	LG ThinQ	0
Energy Efficiency	R1 Compressor applied	0
	Low Noise Mode	0
Comfort	Seasonal Auto Mode	0



# IWT (INTEGRATED WATER TANK)



## THERMA V R32 IWT (Integrated water tank)

THERMA V R32 IWT, or integrated water tank, is a domestic hot water supply, space heating and cooling solution that conveniently combines an indoor hot water tank with a separate outdoor unit. THERMA V R32 IWT is the perfect space-saving solution for residential applications because hydronic components like the domestic hot water (DHW) and buffer tanks, which are typically installed separately, are fully integrated.



### Features & Benefits

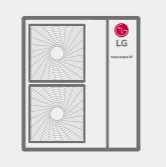
- DHW tank (200ℓ) & hydronic component integration
- IWT indoor unit is suitable to install in indoor space like utility room, kitchen, etc.
- R1 compressor applied for high efficiency and operation range is improved
- R32 is more efficient and boasts 68% reduced Global Warming Potential (GWP) than the conventional

### Key Applications

- Residential

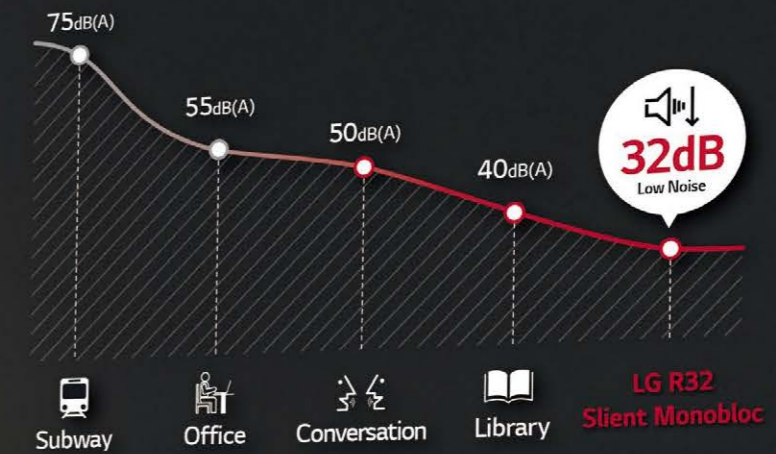
Function	Therma V	
Smart	Enhanced Energy Information (Power consumption against target)	0
	LG ThinQ	0
Energy Efficiency	R1 Compressor applied	0
	Low Noise Mode	0
Comfort	Seasonal Auto Mode	0

# R32 SILENT MONOBLOC



## R32 Silent Monobloc

The LG THERMA V R32 Silent Monobloc is designed for lower noise levels than conventional Monobloc series while retaining its previous advantages; All in one with eco-conscious R32 refrigerant and LG's powerful yet stable R1 compressor. Thanks to its low noise level corresponding with DACH region noise regulations, THERMA V R32 Silent Monobloc offers maximized installation flexibility which allows installing within minimum safety space as 5m from neighboring houses. Moreover, the energy efficiency of THERMA V R32 Silent Monobloc is remarkably enhanced compared to conventional Monobloc as so it is recognized as an ultra-high efficient model.



### Features & Benefits

- Very low sound level (32dB(A) at 5m in low noise mode)
- Excellent performance at low ambient temperature (100%@-7°C)
- R32 is more efficient and boasts 68% reduced Global Warming Potential (GWP) than the conventional

### Key Applications

- Residential

Function	Therma V	
Smart	Enhanced Energy Information (Power consumption against target)	○
	LG ThinQ	○
Energy Efficiency	R1 Compressor Applied	○
	Wide Operation Range	○
Comfort	Corrosion Resistance Black Fin	○



# SMART HOME ENERGY PACKAGE



## Good Design adds Elegance and Class to your Space

### Our Complete Solution at a Glance

LG Smart Home Energy Package is comprised of PV solar module, ESS and AWHP which can be integrated into all types of houses. Enjoy a comfortable and sustainable home while saving your electricity bills.



### Features & Benefits

An integrated, stand-alone system comprised of PV solar module, ESS and AWHP  
 The most efficient, eco-friendly and reliable solution  
 Easier installation and ordering process.  
 Long warranty periods, the high-quality build of all components, and service commitment from a company

### Key Applications

- Residential
- Retail (small office)

Function	Smart Home Energy Package
Smart	ThinQ App. (AWHP) 0
Energy Efficiency	Low waste/less electricity consumption 0
	Generating electricity and heating 0
Comfort	All-integrated (managed by the same customer service team) 0

NEW PRODUCT INTRODUCTION

# LG PuriCare™ Wearable Air Purifier



## Technology That Lets You Breathe Again

Breathing in fresh and clean air has never been easier. LG's new PuriCare™ wearable air purifier blocks 99.95% of harmful particles, including viruses, dust, bacteria and allergens. It uses lightweight and comfortable materials and the fans on each side adjust to the speed of your own breathing cycle making breathing a breeze.



Wearable Air Purifier		
<p><b>Thorough Air Purification</b></p> <p>Wear your clean air</p> <p>Blocking harmful particles with high-efficiency filters – Micro particles, Viruses, Bacteria, and Allergens.</p>	<p><b>Better Breathing</b></p> <p>Breathing pure air made easy</p> <p>No intake air resistance. Comfortable without stuffy breathing.</p>	<p><b>Ergonomic Design</b></p> <p>Ergonomic, Seamless design</p> <p>Ergonomic, Seamless design to fit your face, comfortable for everyday wear, keep glasses free from fogging up.</p>
<p><b>Hygienic Maintenance</b></p> <p>Replaceable Parts UV Sanitization Case</p>	<p><b>Safe to Use</b></p> <p>Medical Grade Materials</p>	<p><b>Semi-permanent Use</b></p> <p>Recharge for Repeated Use</p>

### Wearable Air Purifier

Breathe easy with HEPA filters out harmful particles for clean, fresh air Made with medical-grade silicone, same materials applied to oxygen respirators at hospitals Breathe without breaking a sweat. DUAL Fans blow air at the speed of breath for easier breathing

Function	Wearable Air Purifier	
Smart	HEPA filter	o
Energy Efficiency	UV Sanitization Case	Optional
	Recharge and reuse	o
Comfort	Dual fan	o
	Ergonomic Design	o

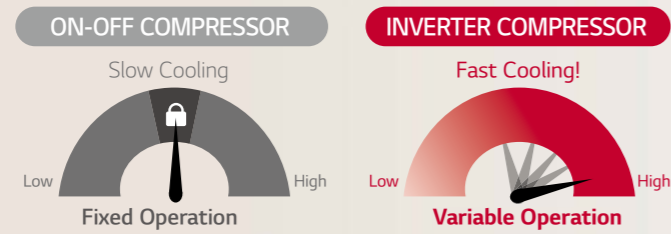
# PORTABLE AIR CONDITIONER



## Fast Cooling by Inverter Technology

### • The Need for Speed

LG's Portable Air Conditioner reaches the optimal temperature more quickly than on-off compressors with variable speed operations.



## Low Noise by Inverter Technology

### • Peace and Quiet

the lg inverter compressor operates more quietly at **42dB** for indoor tranquility



NEW PRODUCT INTRODUCTION

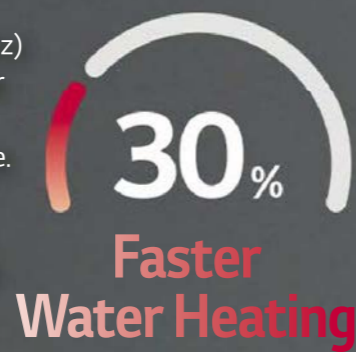
# HEAT PUMP WATER HEATER



LG's new Inverter Heat Pump Water Heater allows for an impressive energy savings of over 70% compared to a conventional electric heater due to the highly efficient DUAL Inverter Compressor



Turbo Mode can run at high speeds (up to 80z) with simultaneous heating. The target water temperature in the tank will be achieved 30% faster in Turbo Mode than in Auto Mode. Furthermore, Turbo Mode can recover the water at 25% warmer temperatures than Auto Mode after 1 hour from an empty tank.



\* The data is based on LG Internal test and simulation.

\* The data is depending on the experimental condition and is changeable according to the usage environment.



### Quick & Easy Installation

The machine's one-direction inlet and outlet piping and easy-to-connect wires in the junction box allow for quick and easy installation. Furthermore, the LG ThinQ app provides Service Alarm and Self Diagnosis programs for convenience maintenance.

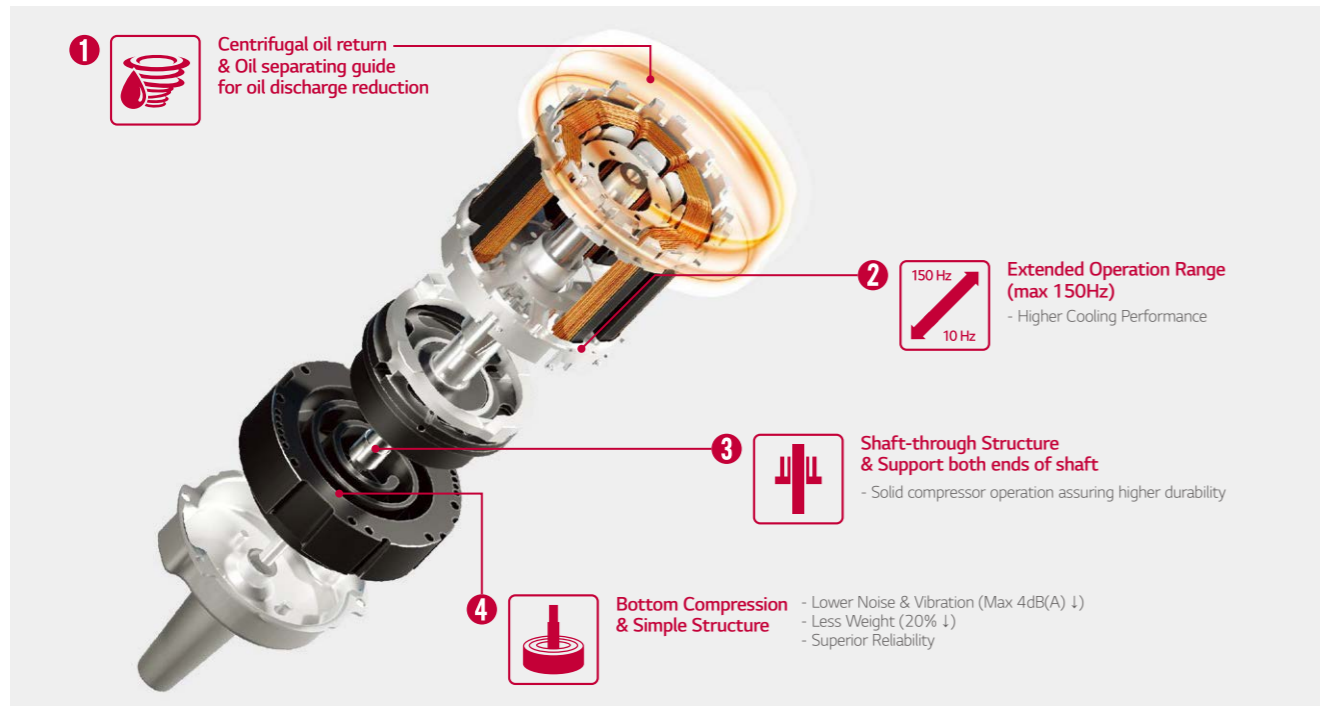


# LG CORE TECHNIQUE



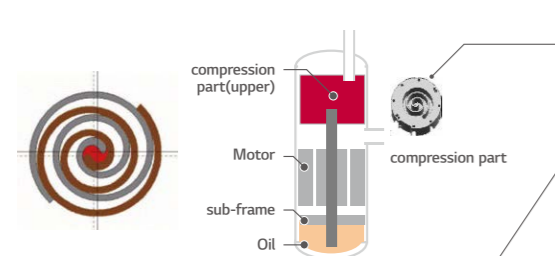
## R1 Compressor™

R1 Compressor is one that combines high-efficiency, low sound characteristics of the scroll and the simple compressing structure of the rotary compressor. This technology enables a highly efficient compact model.

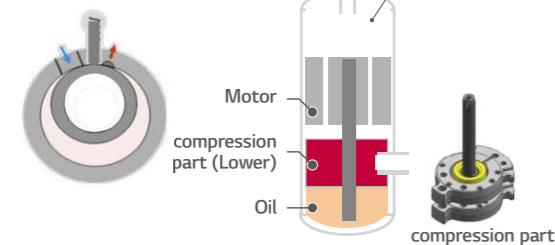


### Conventional Compressor

**Scroll :** High efficiency / Low sound  
(Continuous compression, but complex structure)

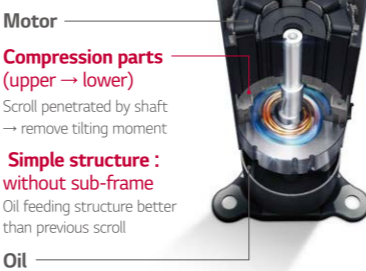
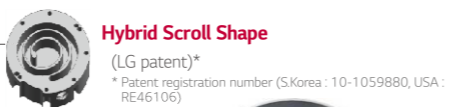


**Rotary :** Simple structure  
(Compression per 1 rotation)



### R1 Compressor™

**Revolutionary Scroll :** High efficiency / Stable & Simple Structure



Extended operation (Max 150Hz)  
Low noise & Vibration (Max 4dB(A) ↓)  
Less weight (20% ↓)

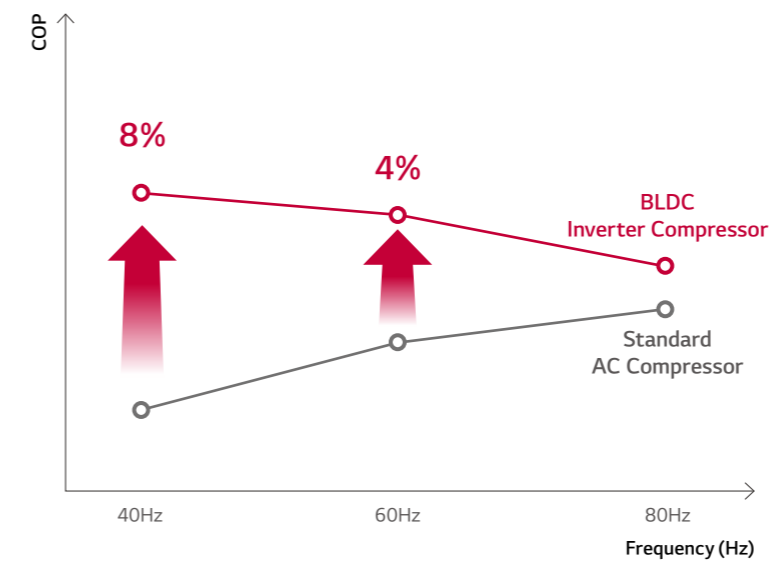
**Compact model**  
(Size 40% ↓, Weight 25% ↓)



## BLDC (Brushless Direct Current Motor) Compressor

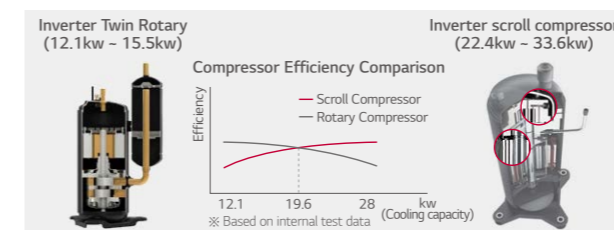
a BLDC compressor uses a strong neodymium magnet. The compressor has improved efficiency compared to standard AC inverter product and it is optimized for seasonal efficiency.

- Minimized oil circulation
- High efficiency motor
- Optimized compression
- Optimized vibration, noise
- High reliability



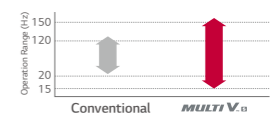
## Ultimate Inverter Compressor

**Inverter Twin Rotary & Inverter Scroll Compressor :** Adapted High Efficient Compressor according to Capacity



### Inverter scroll compressor

**Best-in-class Compressor Speed**  
- Rapid response capability  
- Compact core design (Concentrated motor)  
- Down to 15Hz : Part load efficiency improvement



### Inverter Twin Rotary Concentrated Winding Motor

Oil path area is improved by over 50% by increasing the extra stator cavity. Due to this, caloric value of motor is reduced, improving the cooling function of stator coil.

### Twin Rotary Rotor

Upper and lower part rotor offset imbalance in shaft rotor rotation. Vibration and noise is reduced. Max torque load decreased by 45% compared to single rotor.

### Surface Coating

Surface coating of outstanding abrasion resistance property on vane and crank shaft.

### 6 Bypass Valve

Compressor reliability is maximized with 6 Bypass Valve  
- Prevent compressor damage due to excessively compressed refrigerant more efficiently than 4 Bypass valve



### Direct Oil Injection

- Eliminate suction refrigerant gas heat loss through direct oil injection into compression chamber (Efficiency increases)  
- Increased reliability with regulated oil supply

### Scroll Profile

- The enhanced reliability by increased reliability with regulated oil supply  
- Efficiency increases by expanding 96% Bypass area and 17% improved volume ratio by non-uniform scroll thickness

KEY FEATURES

# LG CORE TECHNIQUE



## Improved BLDC Inverter Dual Inverter Compressor

Parts of BLDC Inverter Twin Rotary Compressor have been improved to allow a longer life span.

### Suction Optimization

Reduced suction loss and improving oil collection through the optimization of suction path.

### Flow Optimization

Reduced oil inflow by increasing the length of oil discharge pipe, leading to a sufficient oil quantity inside compressor hence preventing compressor abrasion.

### Surface Coating

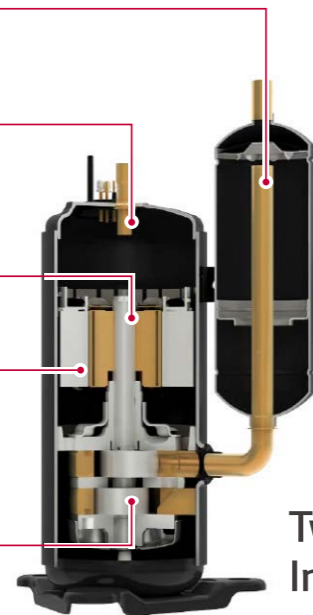
Shaft coating and polishing has been improved.

### Concentrated Winding Motor

- Oil path area is improved by over 50% by increasing the extra stator cavity.
- Due to this, caloric value of motor is reduced, improving the cooling function of stator coil.

### Twin Rotary Rotor

- Upper and lower part rotor offset imbalance in shaft rotor rotation. Max Torque has been decreased by 45% compared to single rotor.
- Vibration and noise is also reduced.



Twin Rotary Inverter Compressor

## Pressure Control Technology by Smart Sensor

Quicker and more reliable operation made possible by pressure control technology.

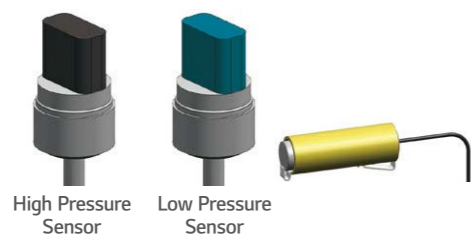
### Field Failure Rate of Outdoor Unit



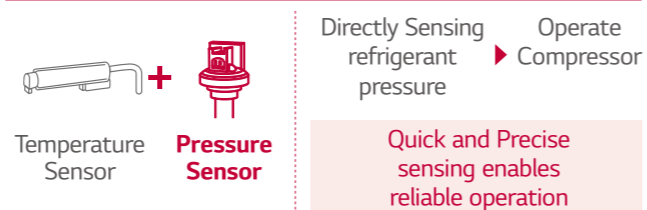
※ LG Internal result  
 ※ FFR Period : 2 years before / after applying pressure sensor

### Temperature + Pressure Control

Senses and controls pressure directly using pressure sensor for faster and more exact response to load variation.

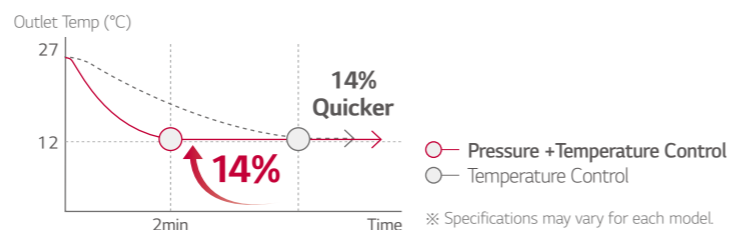


### Smart Sensor



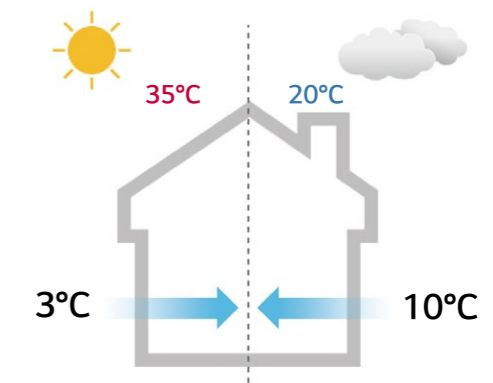
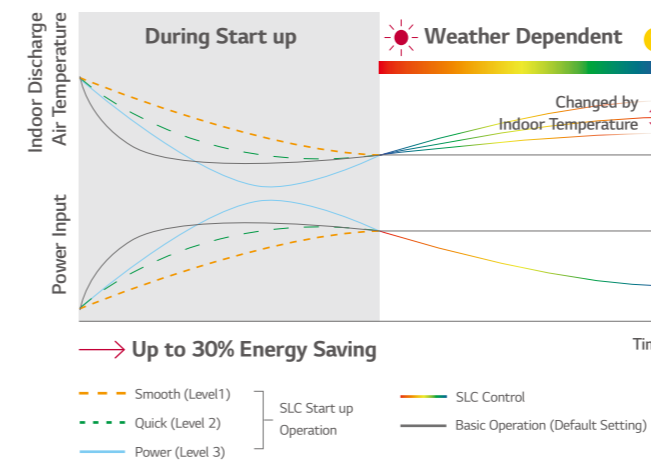
### Quick Operating Response

Desired temperature can be reached up to 14% faster in cooling mode with pressure control, allowing more accurate control of indoor environment for maximized comfort.



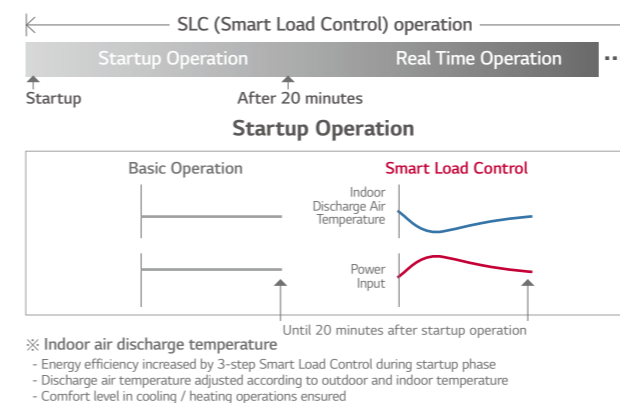
## Smart Load Control

To save operation energy consumption, automatically controls the refrigerant temperature according to outdoor temperature.



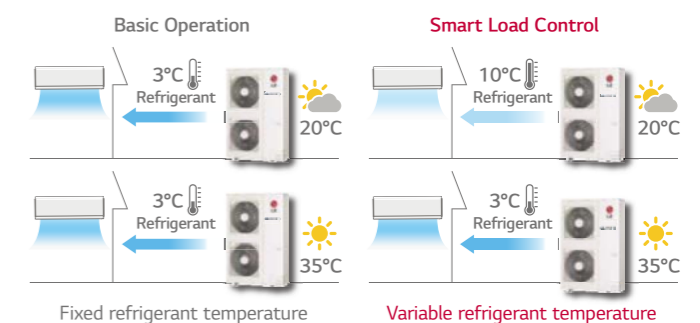
### Enhanced comfort and up to 23% energy savings with MULTI V load control

MULTI V S changes indoor discharge air temperature continuously according to load, to save energy.



Max 10% Energy saving

### Real Time Operation



Max 13% Energy saving

※ How to set up : By dip switch in outdoor unit (Referred to Product Data Book) Factory default setting is Off

※ ESEER (European seasonal energy efficiency Ratio) conditions based on 15.5kw unit

- Outdoor temperature condition : EER 100% / 75% / 50% / 25% = 35°C (DB) / 30°C (DB) / 25°C (DB) / 20°C (DB)
- Indoor temperature condition : 27°C (DB) / 19°C (WB)

※ Dual sensing (Temperature & humidity) smart load control is possible with Remote controller PTMTB100 (White) /PREMTBB10 (Black)

# KEY FEATURES

## LG CORE TECHNIQUE



### DUAL Sensing Control

Air conditioners can rapidly achieve a comfortable indoor environment for customers with Temperature & Humidity Sensors.



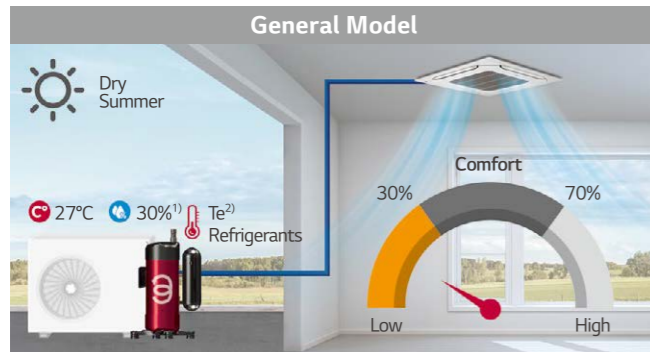
By sensing both temperature and humidity, this feature helps avoid over-cooling and dehumidification, maximizing comfort



※ Comfort cooling apply to Ceiling Cassette, Ceiling Suspended, Console  
- It does not apply to small capacity cassette models.  
(UT09FH, UT12FH, CT09F, CT12F, CT18F)

#### • Dry Summer

During a dry summer season, the system senses the low humidity levels and decreases the operating ratio to increase humidity for a more comfortable environment and energy efficient operation.

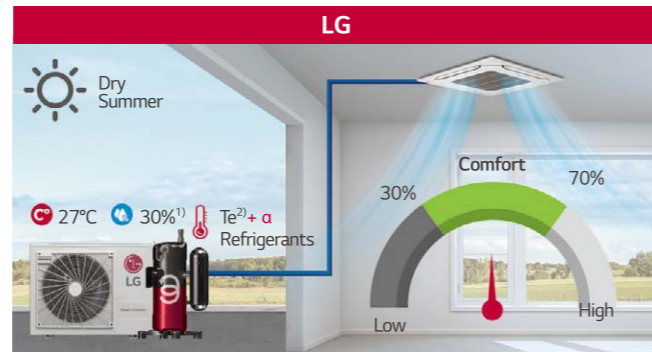


#### • Uncomfortable Environment

Excessive latent heat elimination regardless of humidity

#### • Waste Energy

Eliminate latent heat unnecessarily



#### • Comfortable Environment

By making the room less dry

#### • Increased Energy Efficiency

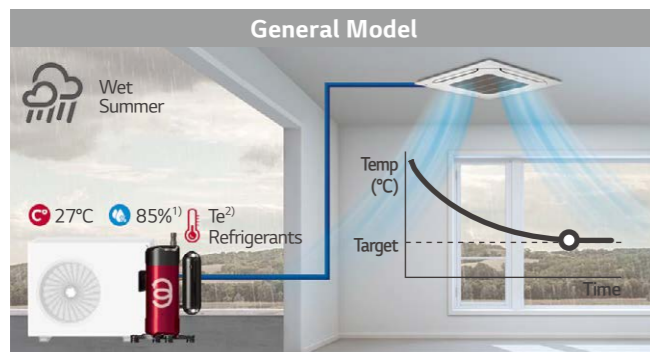
Provide optimized cooling and save energy considering humidity

Humidity Condition : Low (< 30%), Standard (30-70%)

1) Indoor Condition 2) Evaporation Temperature

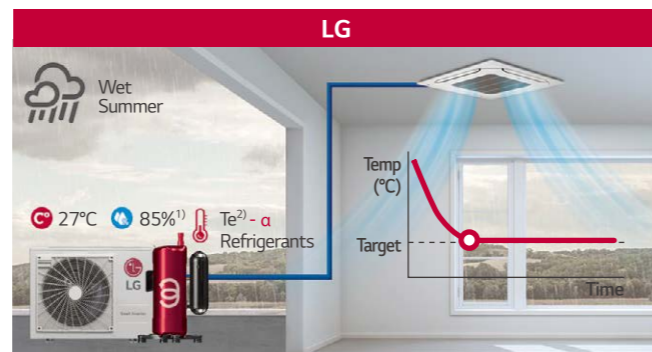
#### • Wet Summer

During a wet summer season, the system senses the high humidity levels and increases the operating ratio to rapidly decrease humidity for a more comfortable indoor environment.



#### • Uncomfortable Environment

General latent heat elimination regardless of humidity



#### • Comfortable Environment

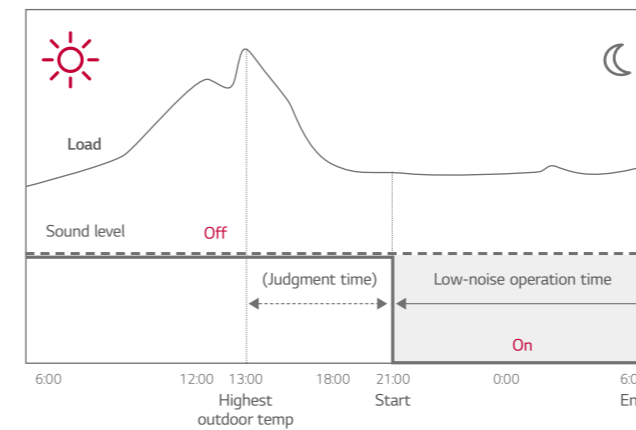
Quick latent heat elimination with humidity sensors

1) Indoor Condition 2) Evaporation Temperature

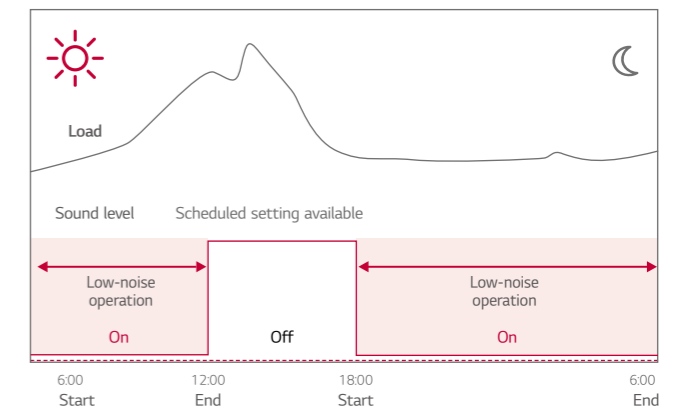
### Low-Noise Operation

For noise sensitive environment

#### Previous Model



#### MULTI V.5

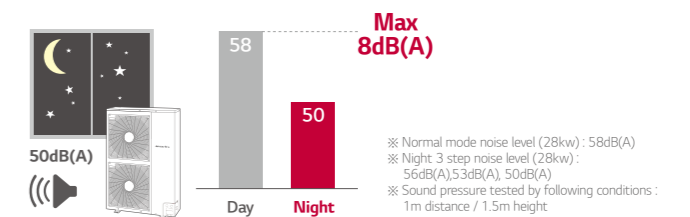
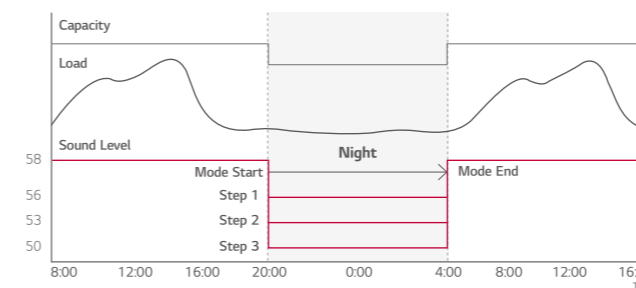


#### Indoor setting available



Night Silent Operation can reduce noise levels at night time by simply setting the dip switch on the PCB of the outdoor unit.

At night mode, noise reduced maximum 14% compared to normal mode.



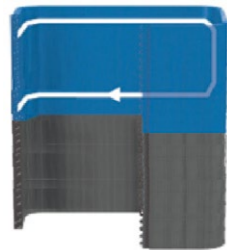
# LG CORE TECHNIQUE



## | INNOVATIVE TECHNOLOGIES |

### Continuous Heating

Variable Path Heat Exchanger : Optimized system efficiency & continuous heating



Low ambient cooling and / or light building load

- Half active
- Lower idle



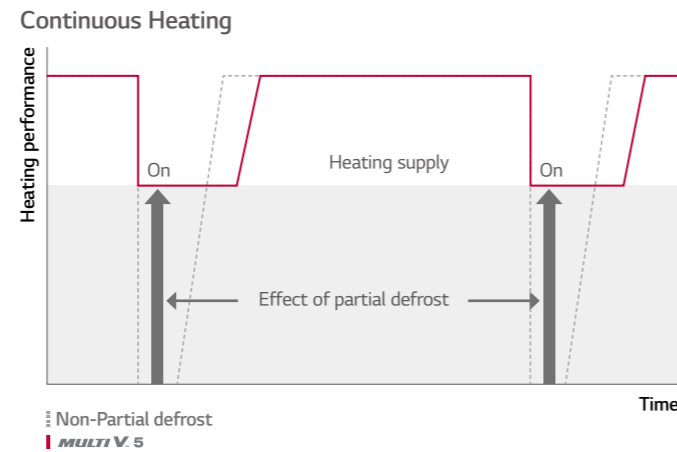
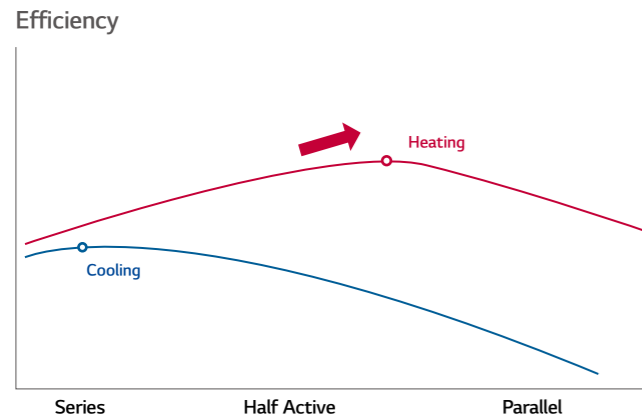
Full load cooling

- Upper & lower active
- Series circuited
- High velocity refrigerant flow



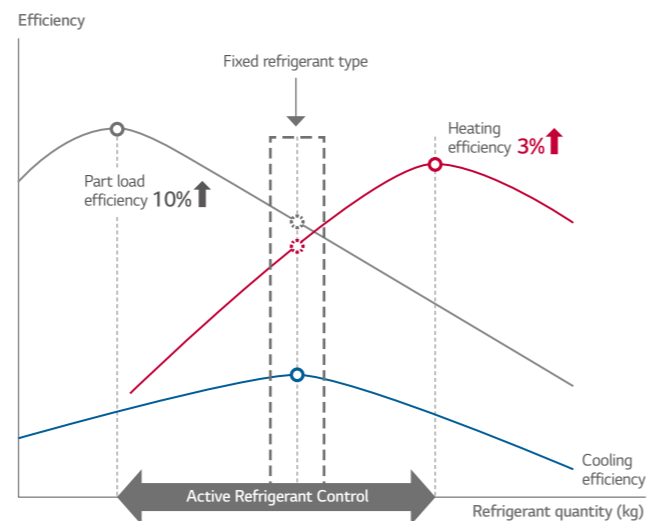
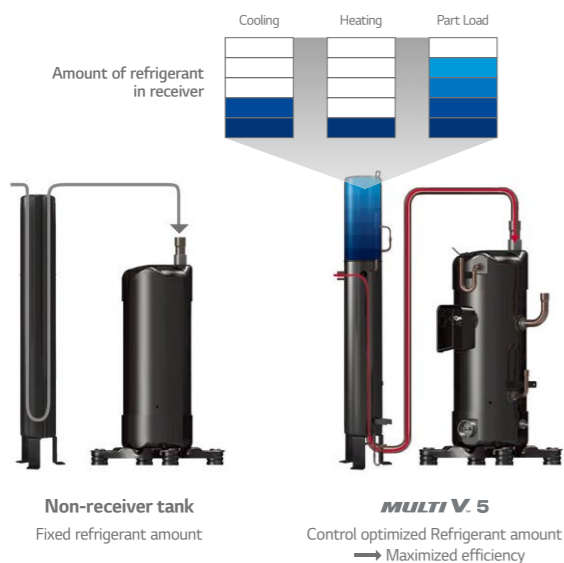
Heating - all conditions

- Upper & lower active
- Parallel circuited
- Low velocity refrigerant flow



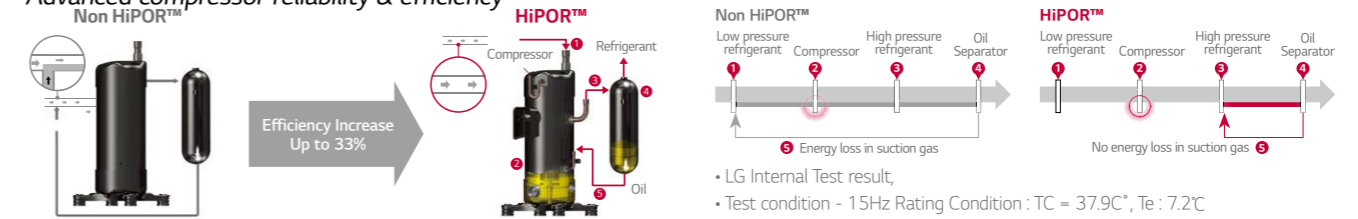
### Active Refrigerant Control

Stable operation & sustaining most efficient operation



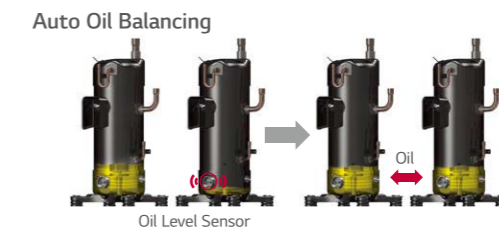
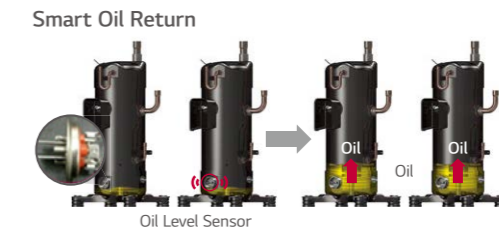
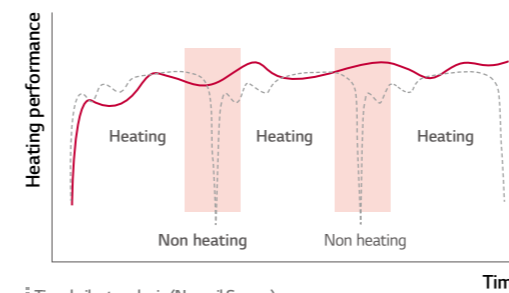
### HiPOR™

Advanced compressor reliability & efficiency



### Smart Oil Management

Energy saving, enhanced heating & increased compressor reliability



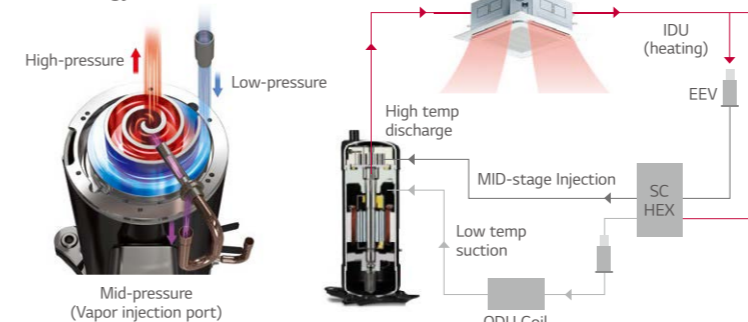
Increased heating operation time per day : Up to 12%

- LG Internal Test result,
- Test condition
- without oil level sensor : every 8hour oil recovery operation
- with oil level sensor : non oil recovery operation

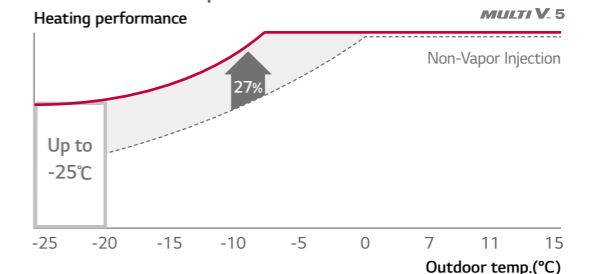
### Sub-cooling & Vapor Injection

Increased heating performance

Technology Mechanism



Performance Comparison



\* Improved heating performance by 27%

\* Comparison tested on 10HP model



# LG CORE TECHNIQUE



## Corrosion Resistance Black Fin

The black coating with enhanced epoxy resin is applied for strong protection from various corrosive external conditions such as salt contamination and air pollution including fumes from factories.

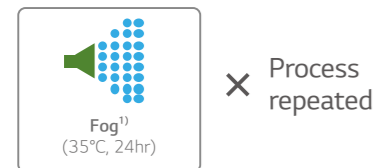
**Longer Lifespan, Lower Maintenance Costs**

- Hydrophilic Film (Water Flow)**  
The Hydrophilic coating minimizes moisture buildup on the fin.
- Acryl + Epoxy + Melamine Resin (Corrosion Resistant)**  
The Black coating provides strong protection from corrosion.
- Aluminum Fin**

Note: Product is not fully treated for anti-corrosion. To install near the sea, additional treatment must be required.

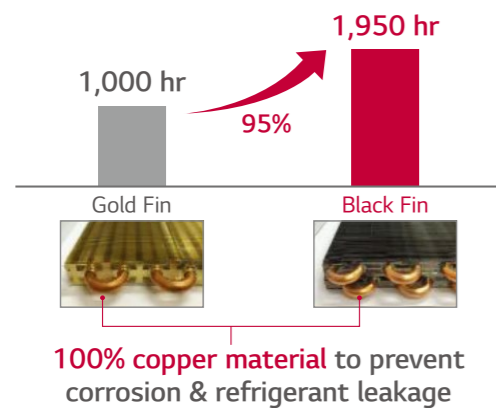
### SST (Salt Spray Test)

Test Process



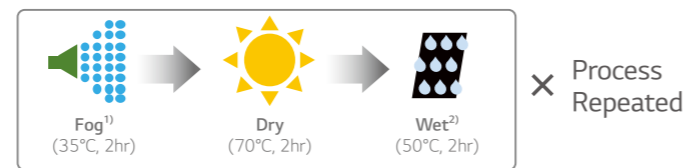
Test process is conducted according to ISO 9227.  
1) Salty water concentration : NaCl aqueous solution (5%)

Test Result (5% Area of defects compared to initial)



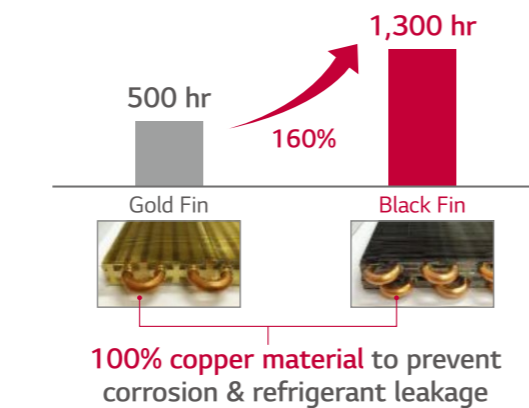
### CCT (Cyclic Corrosion Test)

Test Process



Test process is conducted according to ISO 14933.  
1) Salty water concentration : NaCl aqueous solution (5%)  
\* Dry condition changed : 60°C, 4hr -> 70°C, 2hr  
2) Deionized water

Test Result (5% Area of defects compared to initial)

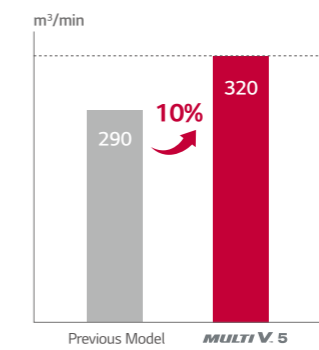


## Biomimetic Fan

Maximized performance

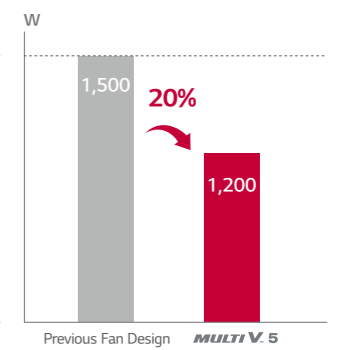


Air flow rate



\* Comparison based on 20HP model

Power consumption



\* Comparison based on air volume of 290m³/min

## Advanced Grille & Fan

The improved grille shape design on the outdoor unit helps to distribute air more efficiently which improves heat exchange and reduces the noise level. The new axial Fan has a thick front edge and a smooth rear edge, thus providing not only high efficiency, low noise, wide fan, but also improving the air flow rate.

**Grille**

**Fan Type 1**

- Mogul Trailing Edge
- Reverse Hub
- Narrow Hub Blade
- 526mm

**Fan Type 2**

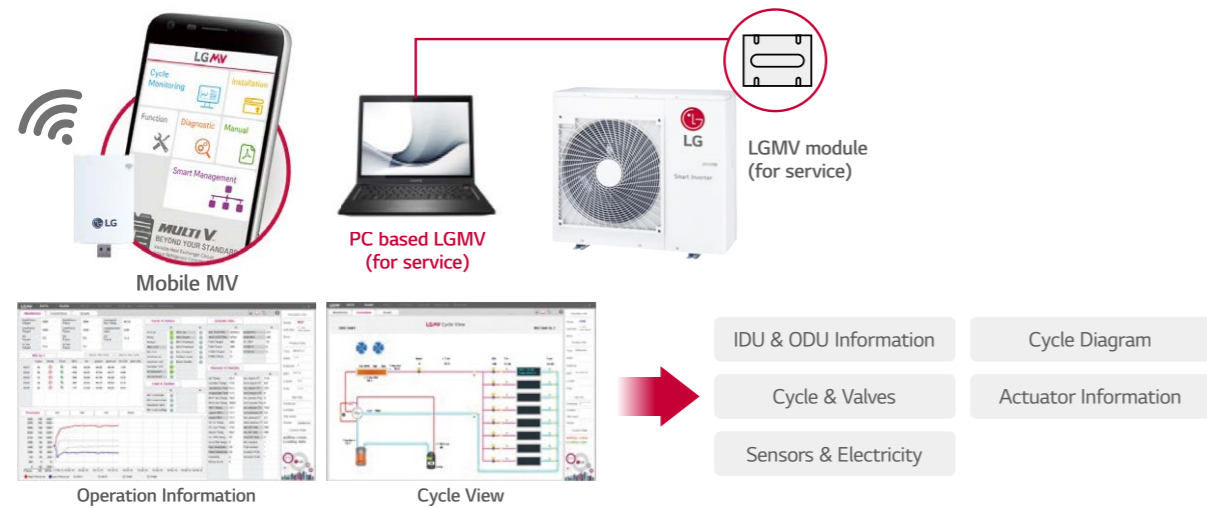
- Leading Edge Thickening
- Saw Tooth Trailing Edge
- 460mm

# LG CORE TECHNIQUE



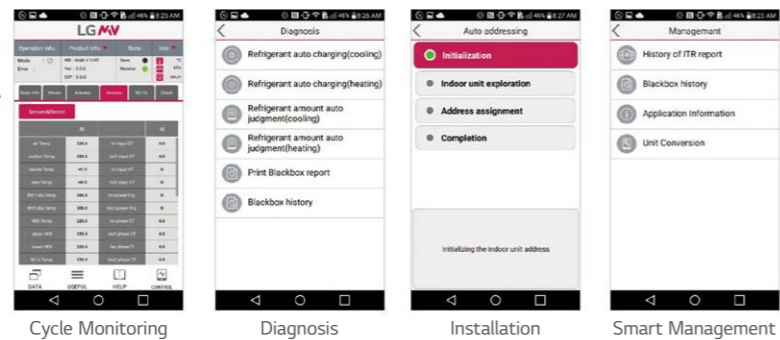
## LG MV (Monitoring View)

LG MV helps engineers to inspect and monitor air conditioning units easily.



## Error Indicator

Contents	
01	Air temperature sensor of indoor unit
02	Inlet pipe temperature sensor of indoor unit
03	Communication error : Wired Remote Controller ↔ Indoor Unit

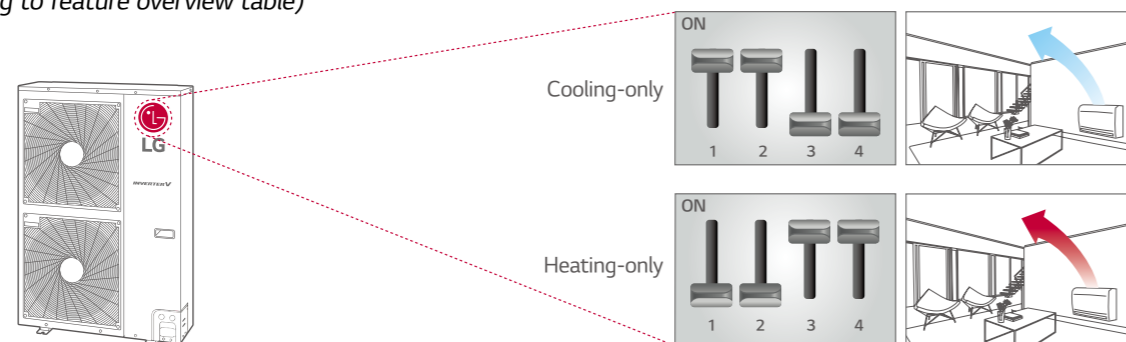


A technician not only can check the cycle information with diagrams & graph, but also check easily the error status (Troubleshooting guide) and take action immediately.

※ Search "Mobile LGMV" on Google or Apple store then download the app.  
 ※ Wi-Fi modem (PWFMD200) is required by option.

## Mode Lock

Set the operation mode to either cooling-only or heating-only; either by adjusting the wired remote controller or setting the DIP switch to avoid combined use of cooling and heating. (Some models need wired remote controller for mode lock function according to feature overview table)



## LG ThinQ™

Wi-Fi Control : Anytime, anywhere access to the unit with Android & iOS-based smartphones.



Search "LG ThinQ" on Google market or the App Store to download the app.

### Integrated Home Appliances Control

Control / Monitor all your LG appliances from one place.

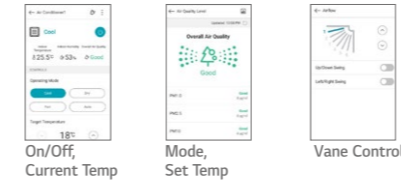


### Easy Registration and Log-in

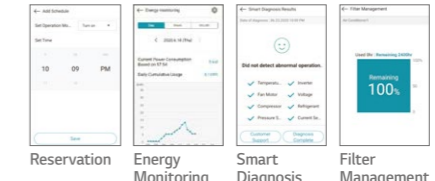
Follow the easy set-up steps that will activate LG ThinQ's user-friendly features.



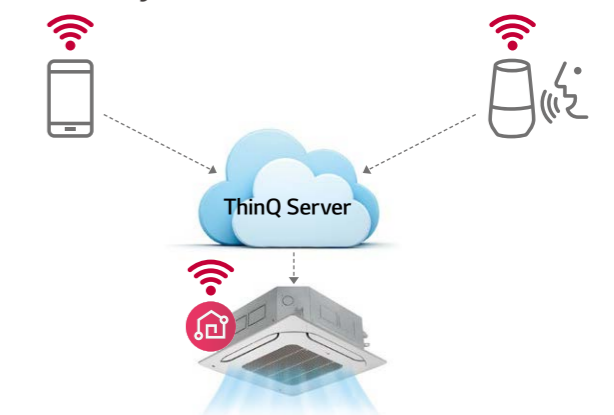
### Simple operation for various functions



### Straight forward Management



## Access your air conditioner anytime and from anywhere



### Simple operation for various functions

- Air Purify\*
- On / Off\*
- Mode Selection\*
- Current temperature\*
- Set temperature\*
- Set fan speed\*
- Vane Control

\* This functions are used by google assistant & amazon alexa  
 ※ In some countries, the use of the google assistant & amazon alexa system may be restricted.  
 - Launched country : Germany, UK, Ireland, Austria, Switzerland, France, Spain, Italy, Russia, Norway, Netherland, Portugal, Turkey, Sweden, Denmark

KEY FEATURES FOR INDOOR UNITS

# WALL MOUNTED



| FRESH AIR |

## Plasmaster™ Ionizer<sup>+</sup>

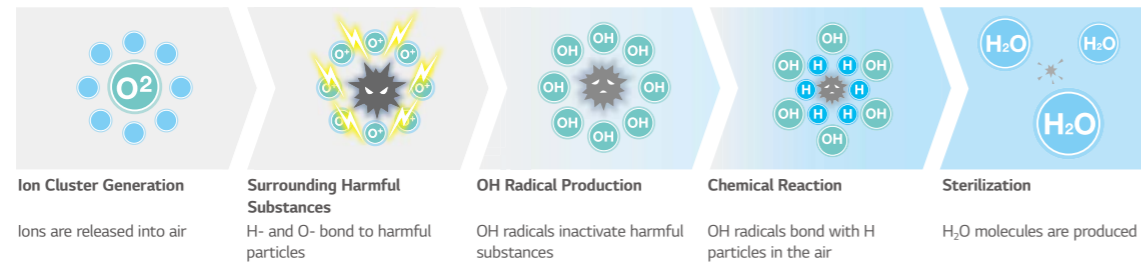
The powerful ionizer protects you from bad odors and Escherichia coli and Staphylococcus in the surface with over 3 million ions to sterilize to make a safer, and cleaner environment.

※ Specifications may vary for each model.  
※ Depending on the experimental conditions.

• How It Works

### Sterilization and Deodorization (Utilizes Over 3 Million Ions)

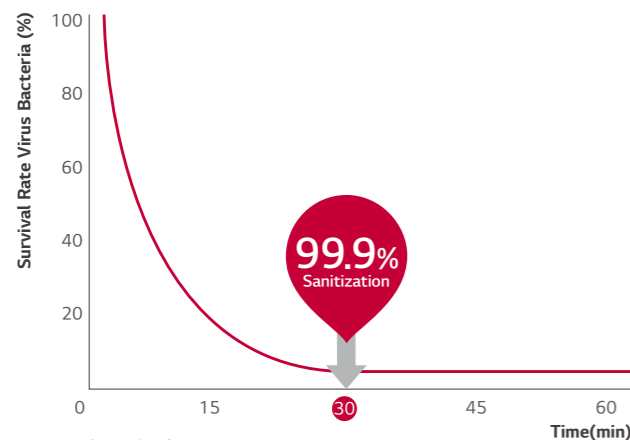
Plasmaster Ionizer+ reduces harmful and contagious microscopic particles by infusing the air passing through the air conditioner with over 3 million ions.



• Test Result

### Sterilization Performance Evaluations

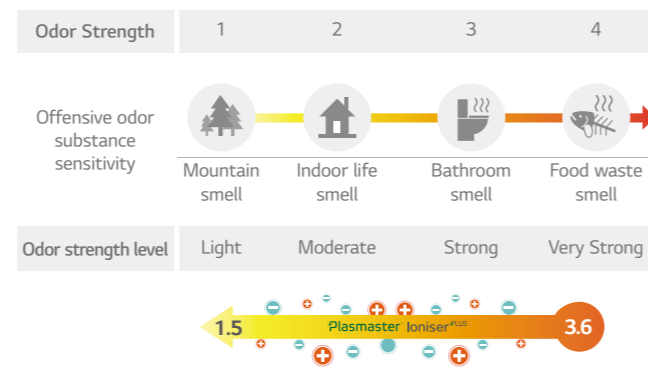
Sterilize Bacteria (E.coli colon bacillus) over 99.9% in 30 min.



\* Test Conditions :  
Space : 52m<sup>3</sup> Chamber  
Temperature & Humidity : Normal  
Bacteria : Staphylococcus Aureus

### 2.1 odor strength decrease in 60 minutes

An odor of measured as 2 European odor units (ouE/m<sup>3</sup>) or less indicates that the level of odor falls within permissible limits.



| FRESH AIR |

## Auto Cleaning

The unit has a self-cleaning function that dries the heat exchanger before sterilizing the interior.

The interior of the air conditioner is maintained clean by drying off the heat exchanger, then sterilizing the interior once more.

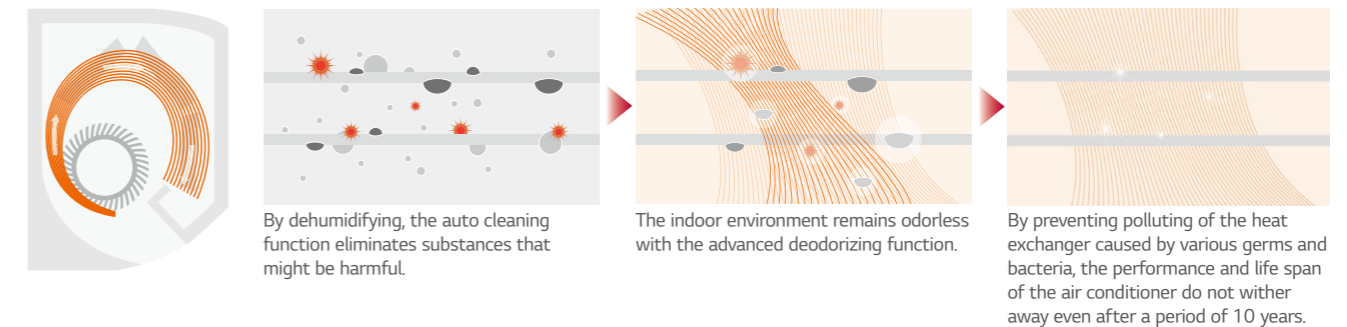
\* Specifications may vary for each model.



• How It Works

### Cleans Filter with Regular Airflow

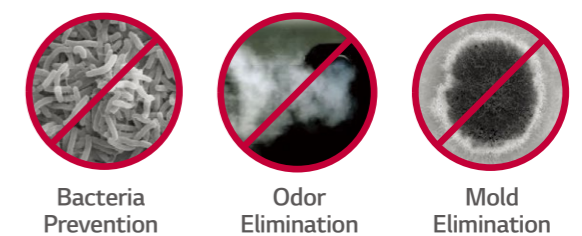
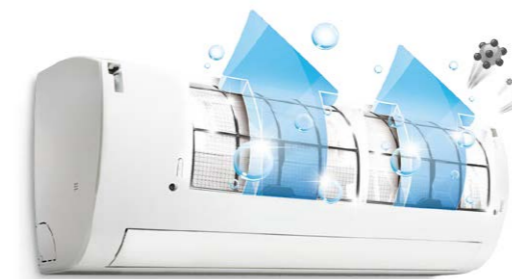
The comprehensive auto cleaning function prevents the formation of bacteria and mold on the heat exchanger, providing an enhancing environment.



• Benefit

### Removes Harmful Particles

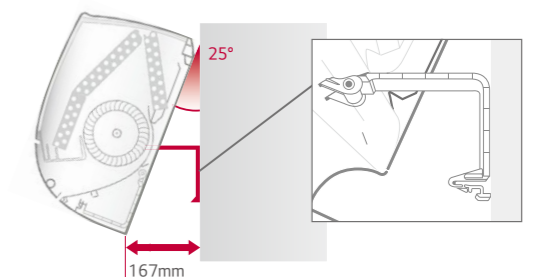
Auto Cleaning provides clean air by preventing bacteria, mold and odors that can otherwise accumulate in an indoor unit.



| INSTALLATION |

## Installation Support Clip

A support clip creates adequate space between the wall and the unit for easier installation.



# WALL MOUNTED



## | FAST COOLING & HEATING |

### Auto Swing

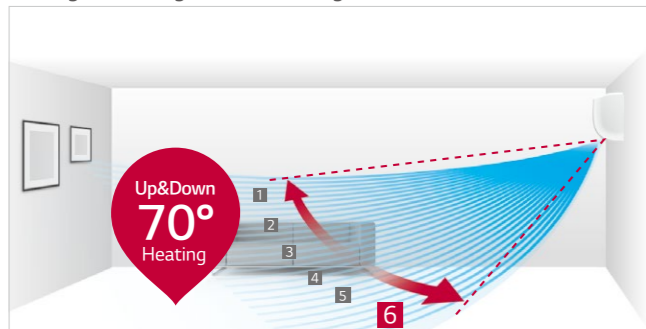
Cool air extends to the entire room regardless of where the unit is situated.

\* Specifications may vary for each model.

#### • How It Works

##### 6-Step Vane, Control up to 70°

The vertical vane, which moves up and down, has 6 different settings including full-auto swing.



\* Angle can be different from each model and working mode.

##### 5-Step Louver, Control up to 55°

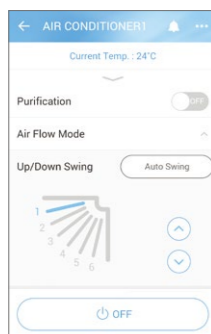
The louver, which sways left and right, has 5 different settings including full auto-swing.



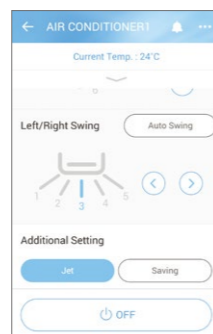
#### • Easy and Simple Control

Airflow direction can be changed by LG ThinQ Wi-Fi app.

##### Up/Down Swing



##### Left/Right Swing



### Jet Cool

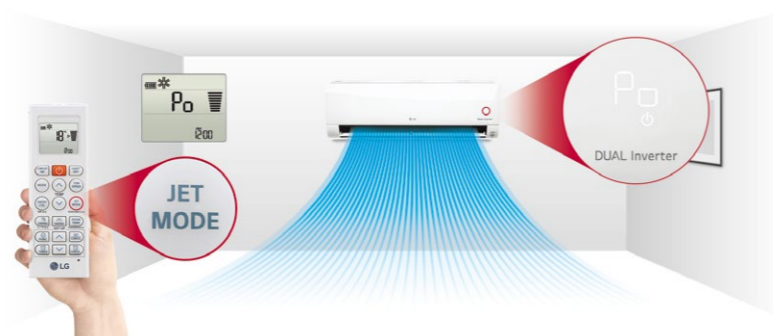
LG air conditioners provide optimized high-speed airflow, which can cool rooms faster while delivering cool air evenly in every direction.

※ Specifications may vary for each model.  
※ Depending on the experimental conditions.

#### • How It Works

##### One Click "Jet Mode"

Reduces the temperature of outflowing air to 18°C for 30 minutes with just one click.



# CEILING MOUNTED CASSETTE



## | NEW DESIGN |

### DUALVane™

4 Way Air Flow with New Design : New Excellent Technology (NET) certifies new 4 way dual vane design that promotes comfortable and convenient airflow.



#### \*6 Airflows mode



Fast and Quick Power Mode



Fresh and Natural Up / Down Swing



Auto Vane Control Smart Mode



Indirect cooling & Heating Indirect Wind



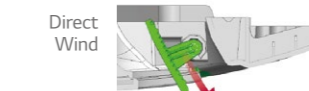
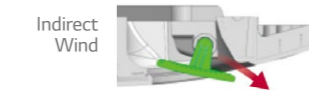
Suitable for High Ceiling Direct Wind



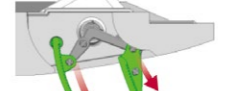
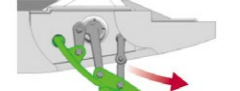
Provide high concentration Refresh Mode

#### \*New types wind

##### Normal

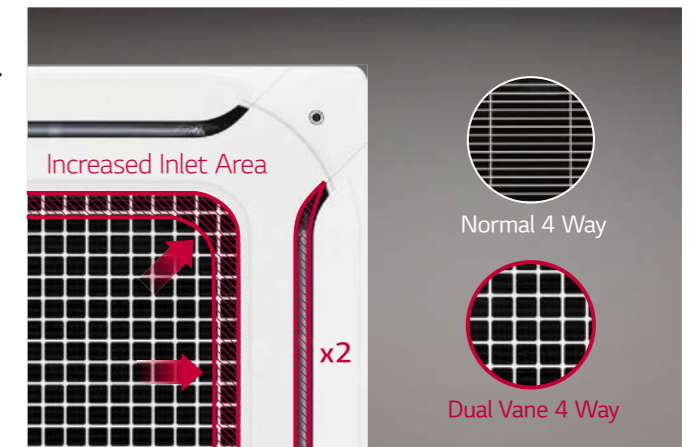


##### Dual Vane



### Wide Design

Bigger inlet and outlet make faster cooling / heating airflow.



### Full 3D Turbo Fan

Full 3D Turbo fan decreases air resistance, so it makes High Efficient and reduces noise level.

#### Turbo fan



#### Full 3D Turbo fan

Power consumption 13W ↓, Noise 3dB(A) ↓



Improved outlet flow rate

KEY FEATURES FOR INDOOR UNITS

# CEILING MOUNTED CASSETTE



| SMART |

## Ceiling to Floor Temperature Sensing

With a special sensor that sense both ceiling and floor temperature, dual vane 4 way cassette provides comfort air.



※ Available only for products with floor temperature sensor.

## Air Quality Level Display

Wi-Fi functionality for anytime, anywhere indoor unit control and air quality level display.

① IDU LED

Real-time indoor air quality level displayed on indoor unit



Good	Moderate
Unhealthy	Poor

② Remote controller

Air quality level displayed on remote controller



③ Mobile

Anytime, anywhere access to check & control air status via mobile




## Human-detection Air Flow

Human detection provides users with direct or indirect air flow preferences.

Indirect comfort


Provides air flow that blows away from user for comfort.



No touch Indirect airflow Comfort

Direct cooling

Provides air flow that blows directly onto user for cooling.



Direct airflow 2°C Cooler

※ Available only for products with Human Detecting sensor.

## Convenient & Powerful 5-Step Air Purification

Easy-to-manage air Purification system with one-touch air cleaning filter.

Air Purifying Kit

- Deodorization filter
- PM1.0 Filter
- Dust Electrification
- Pre Filter

Air purification panel

- PM1.0 Sensor
- Smart Indicator

Phase 5 | Ion Emission

Phase 4 | Deodorizes

▶ 6 Months / Dry

Phase 3 | Captures Microfine Dust

▶ 6 Months / Washable

Phase 2 | Dust Electrification

▶ Not Required

Phase 1 | Captures Fine Dust

▶ Washable

Cycle Management

Pre-Filter	Ultra Fine Dust Kit	Deodorization Filter
Washable	PM1.0 Filter	6 months / Dry in sunlight

\* Air purifying kit can be applied only with one of dual vane panel PT-AFGW0.

KEY FEATURES FOR INDOOR UNITS

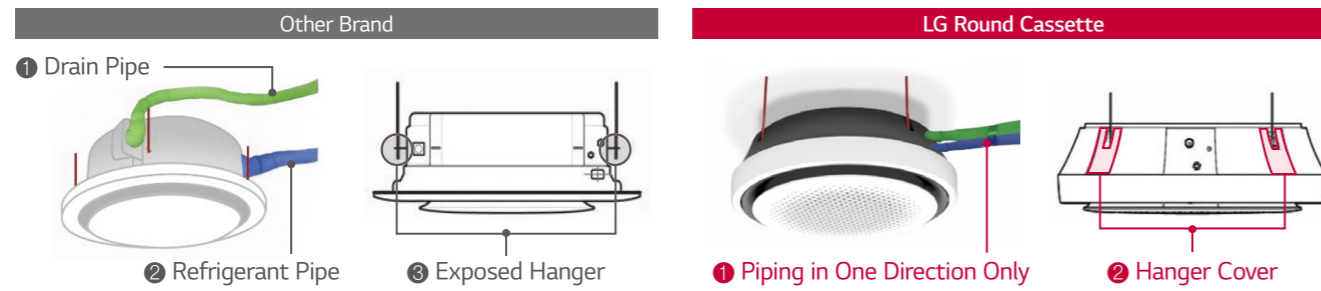
# ROUND CASSETTE



| NEW DESIGN |

### Minimal exposure design

Pipes are brought together in one place to minimize exposure. Hanger covers hide installations to add a clean look.



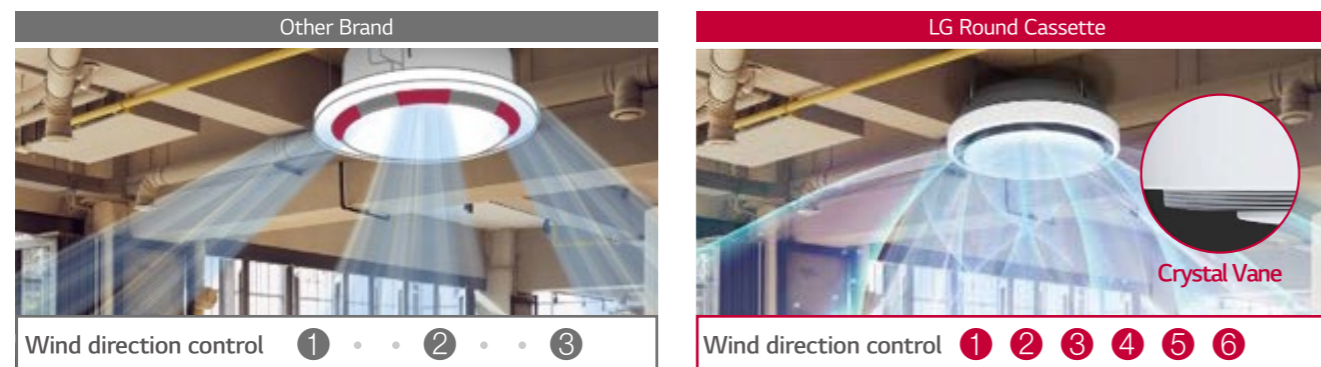
### Perfect round air flow

Perfect round flow without blind spots.



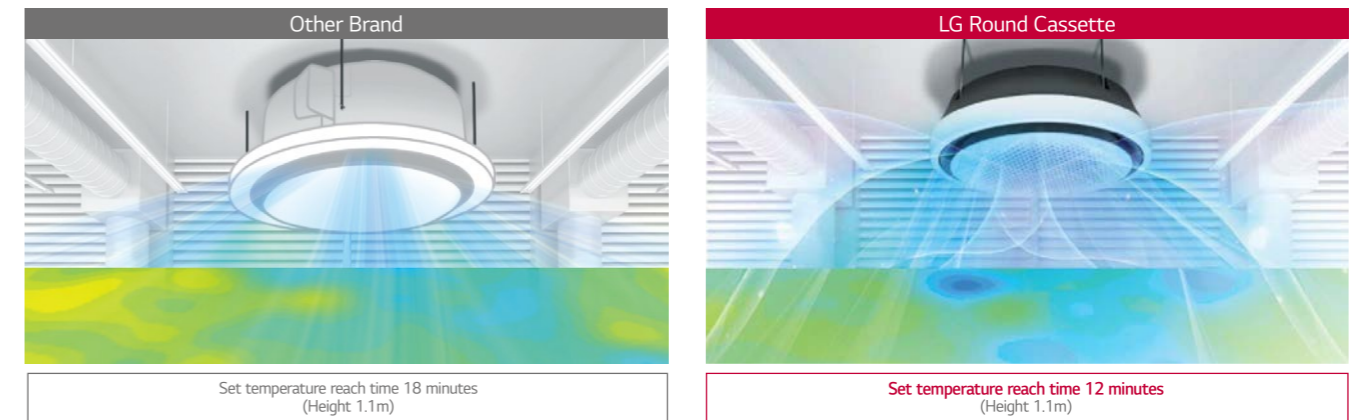
### Visible air flow

With crystal vein for 6-step precision control, you can send cool / heated air wherever you want.



### 30% Faster in cooling

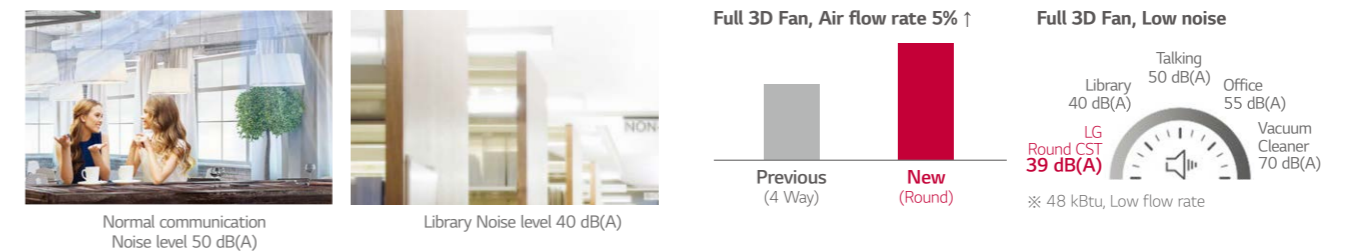
Larger airflow rate, cooling rate is faster than 30%.



※ Based on test results from LG chamber, this image is designed to help customers understand. Experimental environment: height 3.2m, 48 kbtu, cooling mode, high flow rate, horizontal air flow direction

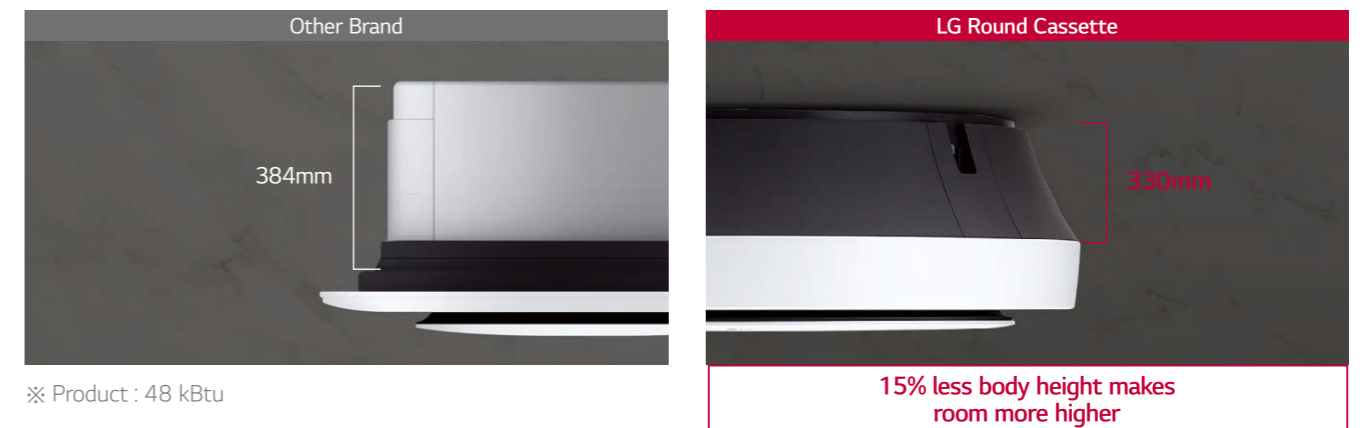
### Powerful and Quiet air flow

3D fan increases airflow by 5% and noise reduction technology makes a quieter, more comfortable space.



### Slim and Compact design

Reduce the height of the body by 15% save space and maximize the openness of the interior space.



※ Product : 48 kbtu

# KEY FEATURES FOR INDOOR UNITS

## CEILING CONCEALED DUCT




### | ENERGY EFFICIENCY |

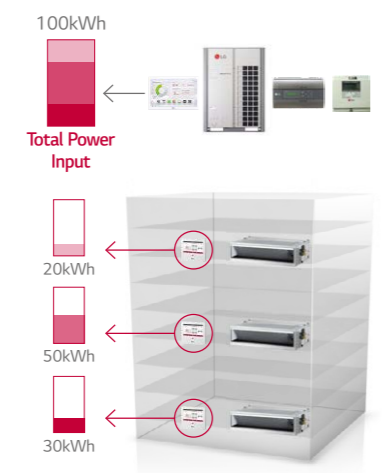
#### Energy Monitoring

Accumulated electric energy of the indoor unit can be identified with wired remote control, as well as with the central controller. This function is an advantage for energy management.

**Install Scene**



**Apply for multistory building**



※ Outdoor unit's accumulated electric energy / using rate of individual indoor unit + indoor unit's accumulated electric energy is displayed in wired remote controller, only when central controller, digital integrating electricity meter and PDI are installed and PDI, outdoor unit and indoor unit are connected with power wire. Only total accumulated electric energy is displayed in standard wired remote controller. In premium wired remote controller, that are displayed into week / month / year.

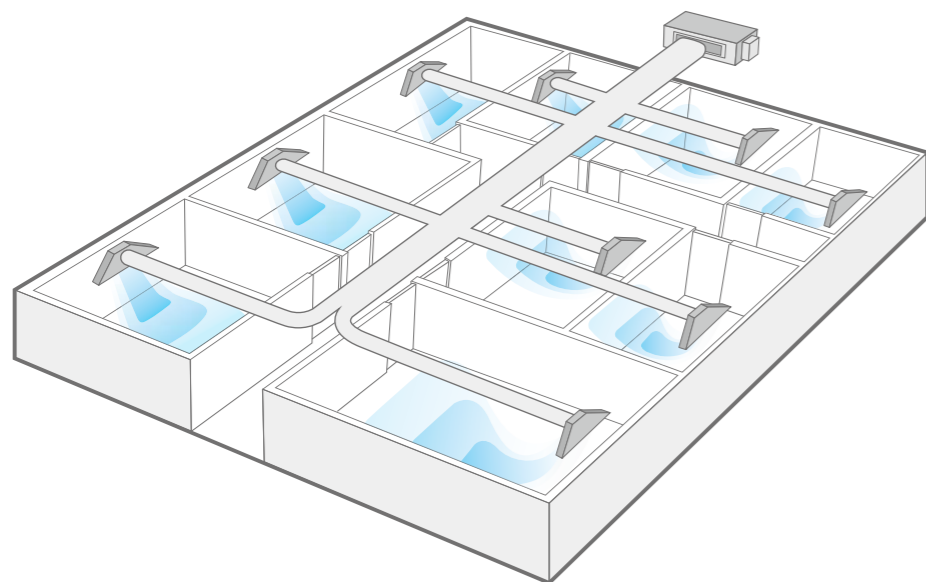
**Premium Wired Remote Controller**  
Total accumulated electric energy 595kWh

**Standard Wired Remote Controller**  
Total accumulated electric energy 3,977kWh

### | COMFORT |

#### Multiple Room Operation

Using a spiral duct (Embedded or flexible type) and stream chamber, it is possible to operate cooling / heating for several rooms simultaneously.

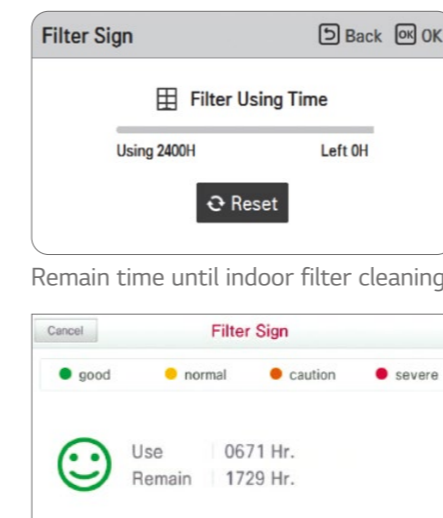


### | COMFORT |

#### Filter Alert

The alarm is activated when the filter needs to be cleaned, and the time remaining for cleaning is displayed on the screen.

**Remain Time Until Indoor Filter Cleaning + Alarm**



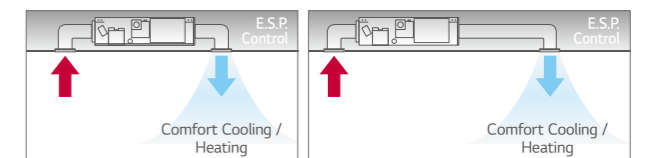
**Standard Wired Remote Controller**  
Remain time until indoor filter cleaning 2,400hr.

**Premium Wired Remote Controller**  
Remain time until indoor filter cleaning 1,729hr.

### | ENERGY EFFICIENCY |

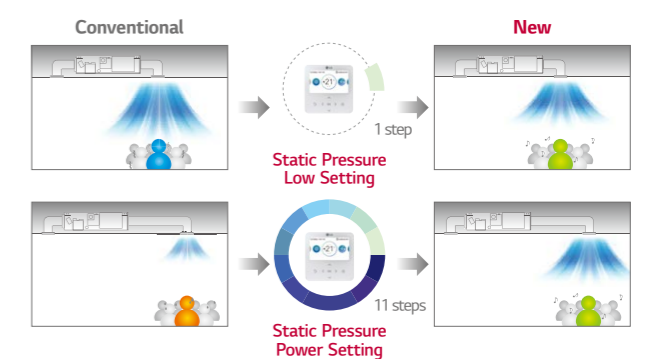
#### External Static Pressure (ESP) Control

User has easy access to air volume selection via remote controller using the ESP control function. The BLDC motor can control fan speed and air volume. No additional accessories are necessary to control air flow.



#### Static Pressure 11- Step Control

Depending on the installation environment, LG's ceiling concealed duct controls the static pressure with 11 steps to provide maximized comfort to any environment.



# CEILING & FLOOR CONVERTIBLE



## | SMART |

### Wi-Fi Control

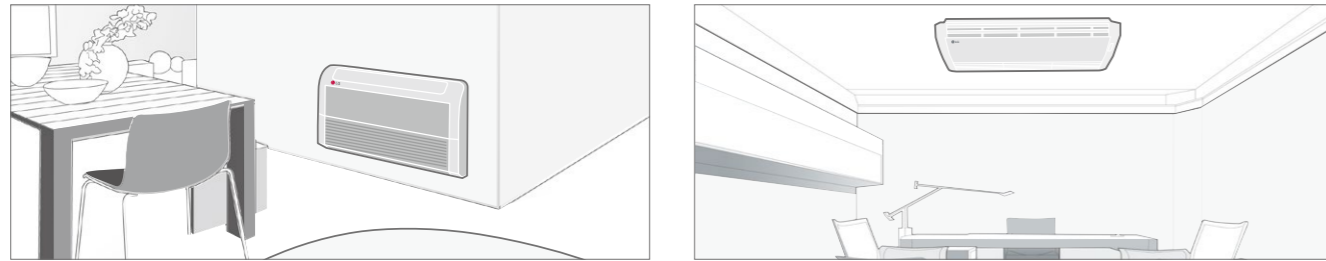
Anytime, anywhere access with LG ThinQ mobile app.



## | COMFORT(CONVERTIBLE) |

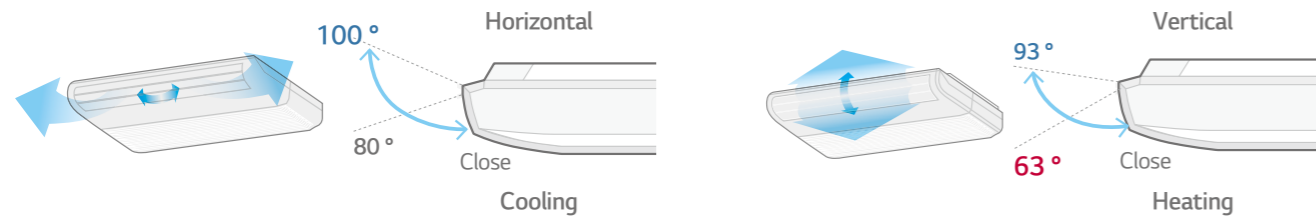
### Flexible

The ceiling and floor models can be installed either on the ceiling or on the floor.



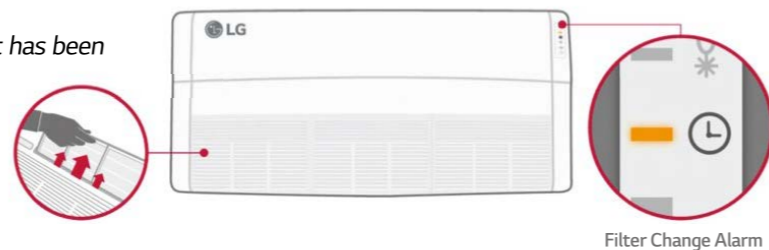
### Air flow Direction Control

Vertical air flow direction can be adjusted using remote controller, and horizontal Air flow direction can be adjusted manually.



### Filter Change Alarm

The filter change alarm informs you when the unit has been operating for 2,400 hours.



# CEILING SUSPENDED



## | COMFORT(CONVERTIBLE) |

### Differentiated Design

Modern elegance design with V-shape and black vane is appropriate for any commercial space. It received iF Design Award.



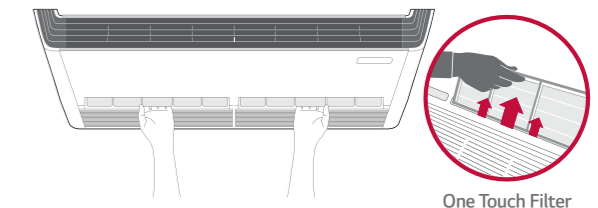
### Powerful Cooling & Heating

High ceiling mode provides powerful cooling and heating up to 4.2m in height from floor, 15m away from ceiling.



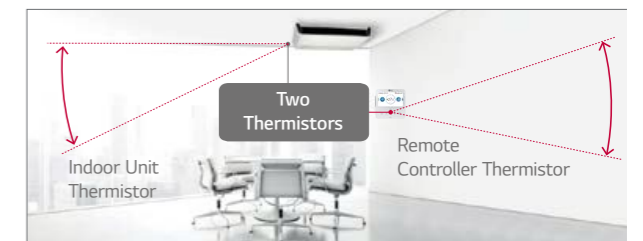
### One Touch & 2 Piece Filter

Easy in / out filter structure as well as a simplified two-piece filter, which slides out for easy cleaning and maintenance.



### Two Thermistors Control

Users can purchase a wired remote controller that includes a second thermistor, allowing for temperature checks from multiple locations.





KEY FEATURES FOR INDOOR UNITS

# CONSOLE & FLOOR STANDING



| SMART |

## Wi-Fi Control

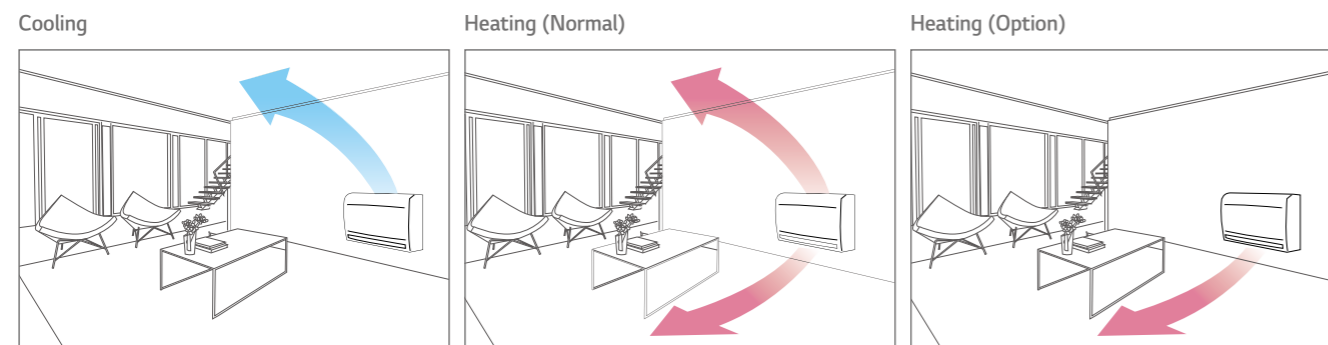
Access your air conditioner anytime and from anywhere.



| COMFORT(CONSOLE) |

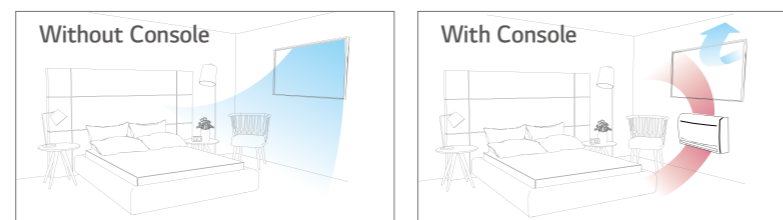
## Air Flow Direction Change

During the cooling operation, the vane adjusts upwards to direct the air flow towards the ceiling. When heating, the vane directs the warm air downwards to balance the room temperature especially for floor.



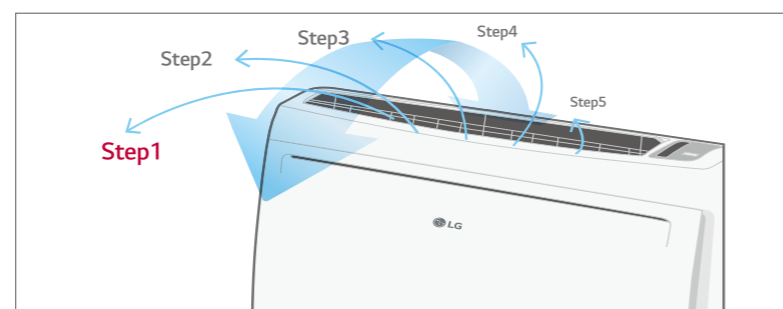
## Cold Draft Protection

The console protects cold draft from windows to provide comfortable environment.



## 5-Step Vane Control

There are 5 different stages to control air flow direction.



| COMFORT(CONSOLE) |

## 6 Way Flexible Piping

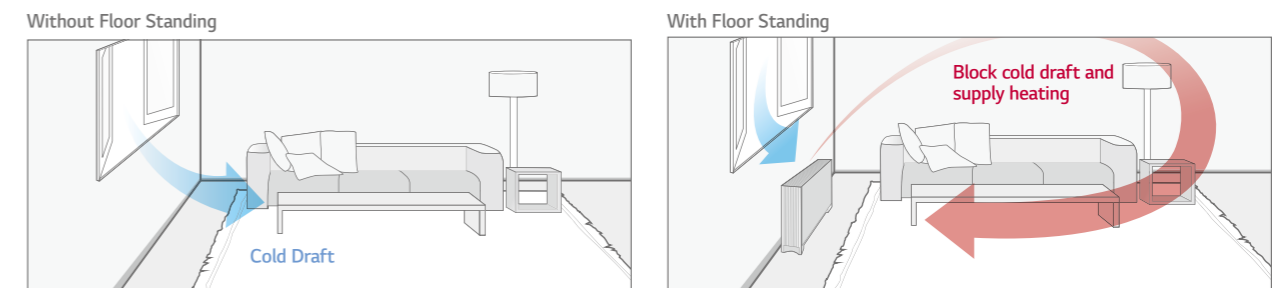
It is possible to install and connect the outdoor unit in 6 different ways. (Right Side, Right Back, Right Floor, Left Side, Left Back, Left Floor)



| COMFORT(FLOOR STANDING) |

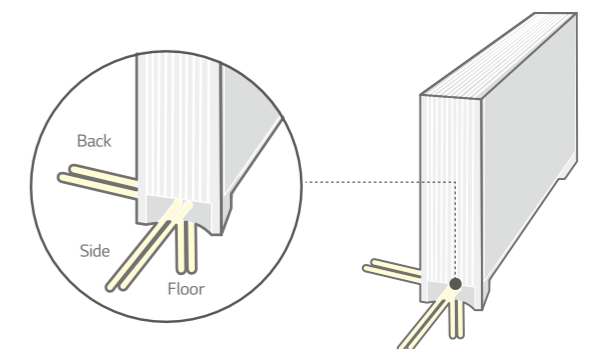
## Protect Cold Draft

The floor standing unit protects cold draft coming from window and preventing condensation.



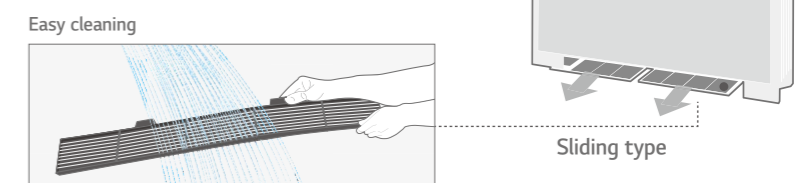
## 3 Way Flexible Piping

It is possible to install and connect the outdoor unit in 3 different ways (Side, Back, Floor).



## Sliding Type Filter

Easy maintenance and extended product life with sliding type filter.



# KEY FEATURES FOR INDOOR UNITS

## HYDRO KIT

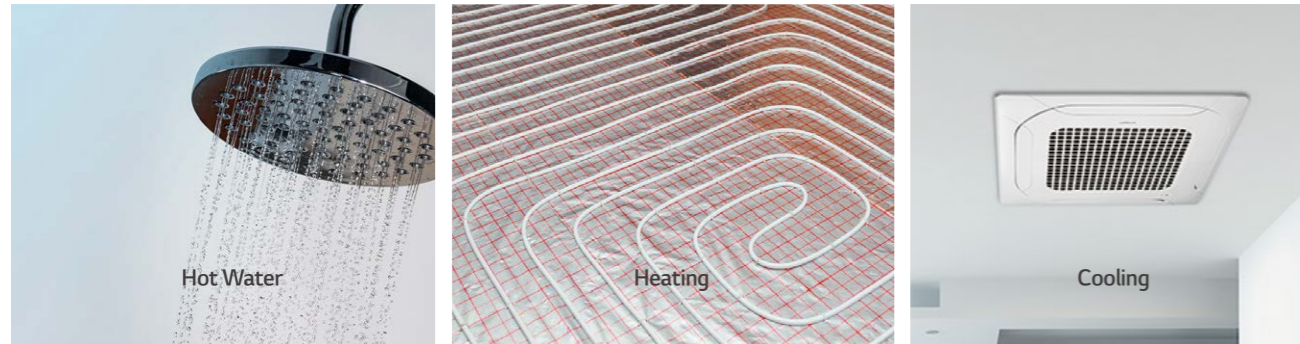


### Features & Benefits

- Lower operation cost compared to fossil fuel-based systems such as boilers.
- More energy saving through MULTI V heat recovery system.

### Key Applications

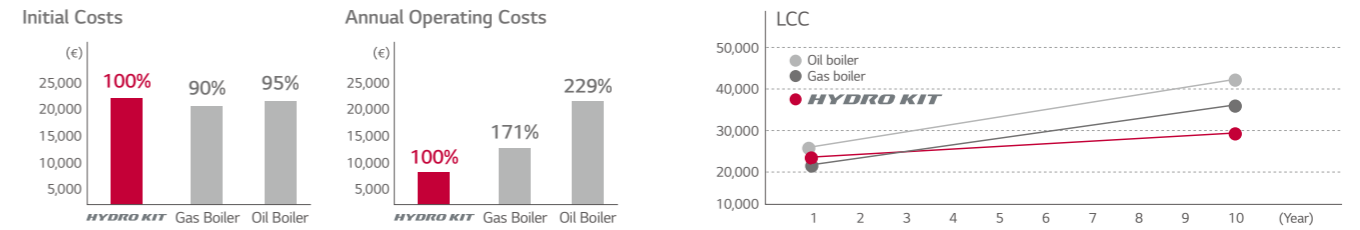
- Where Hot Water is needed such as domestic Hot Water, In-floor or radiant heat. Where cold water is needed such as Fan coil unit and chilled beam.



### | EFFICIENCY |

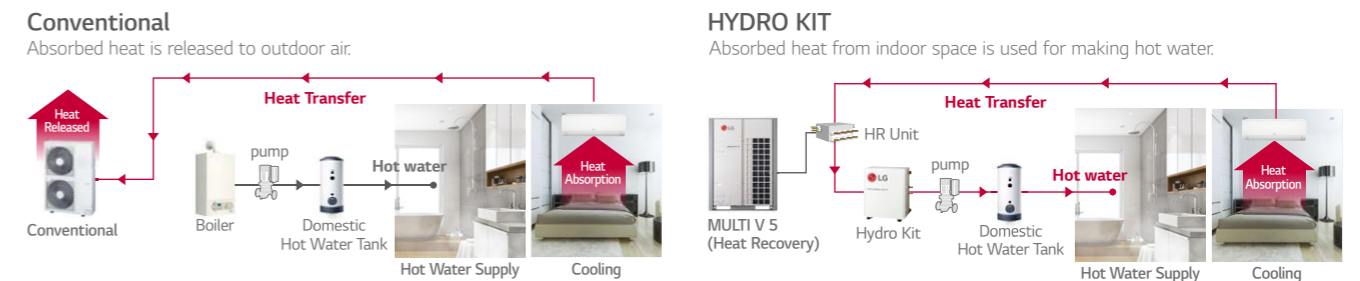
## Cost Savings with High Efficiency

Equivalent installation cost of traditional boiler with reduced operational costs.



## Energy Savings through Heat Recovery

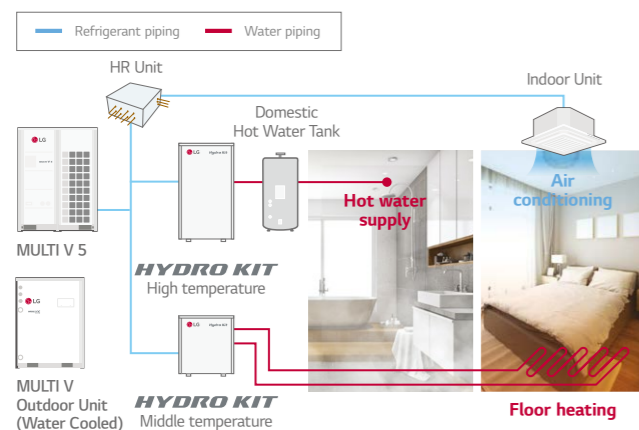
Energy costs can be minimized by reusing the wasted heat from indoor units.



### | CONVENIENCE |

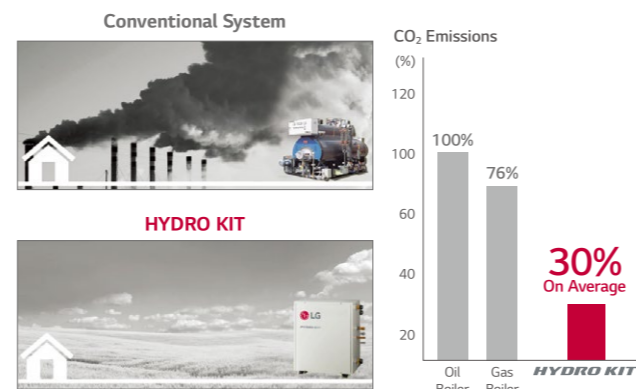
## Total Solution

Total solution provided with heat pump, air conditioning (Cooling by refrigerant and cold water / heating by refrigerant hot water) and domestic hot water supply.

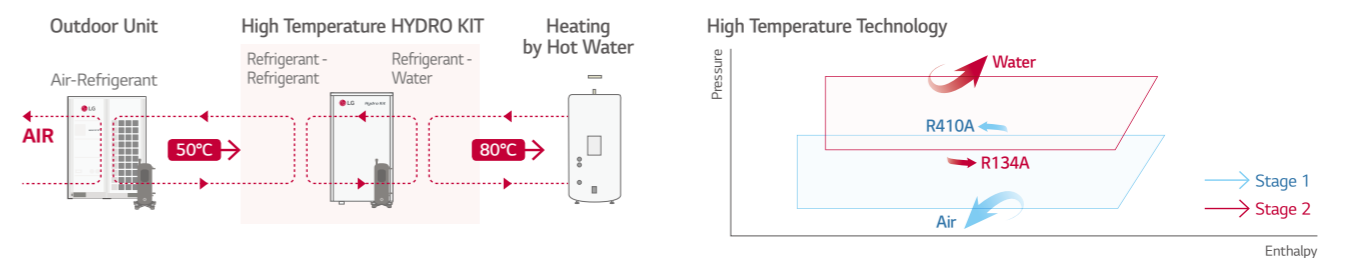


## Eco-friendly Solution

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



## High Temperature HYDRO KIT Cycle Diagram

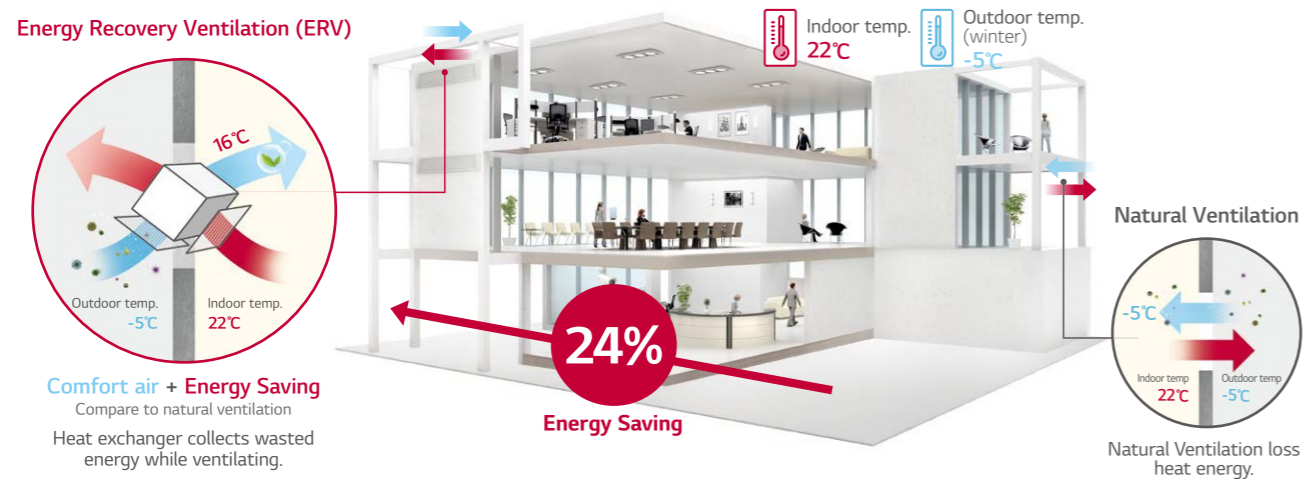


KEY FEATURES FOR INDOOR UNITS

# ENERGY RECOVERY VENTILATION (ERV)



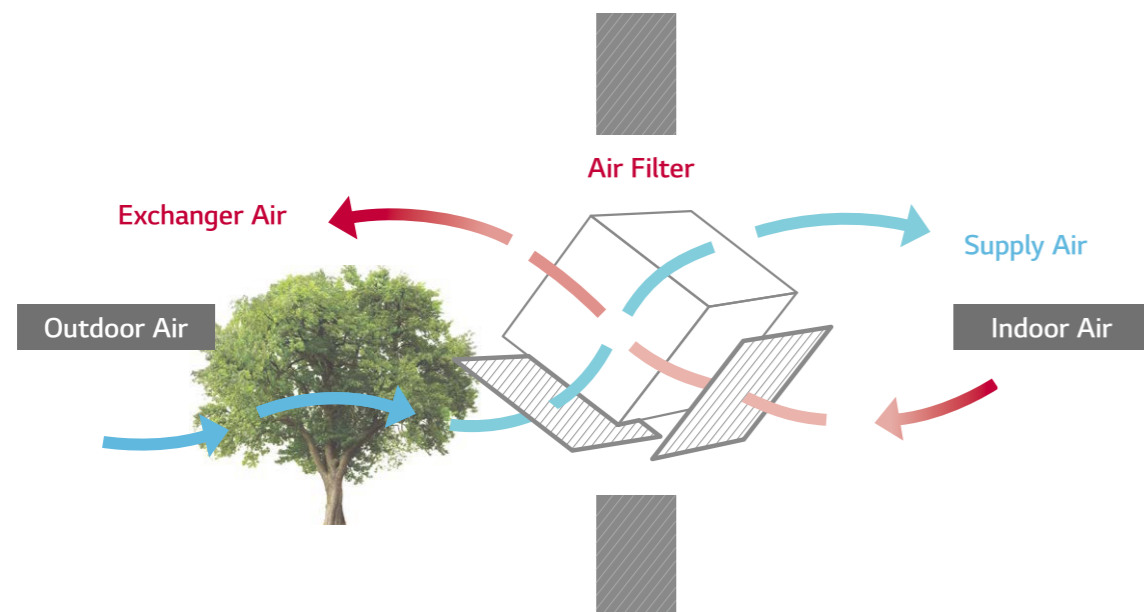
## NECESSITY OF ERV



### | HIGH EFFICIENCY |

#### High Efficiency Heat Exchanger

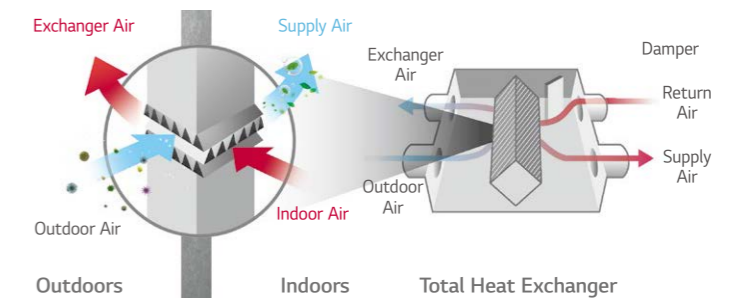
Efficiency and comfort is ensured through the high-efficiency energy recovery central core which recovers energy from the indoor air and transfers it to the fresh incoming air without mixing the air stream.



### | EFFICIENCY |

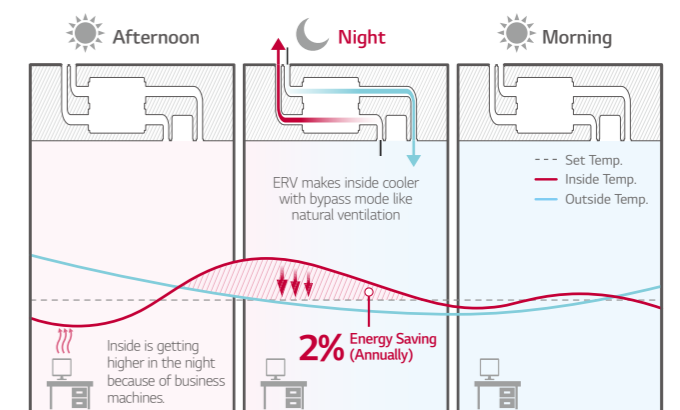
#### Exhaust System

The exhaust system uses a high static sirocco fan to effectively remove contaminants from indoor air. Supply and exhaust air flows are completely separated in the heat exchanger, allowing the LG ERV to filter out impurities before supplying outdoor air to ensure indoor air is fresh and healthy.



#### Night Time Free Cooling

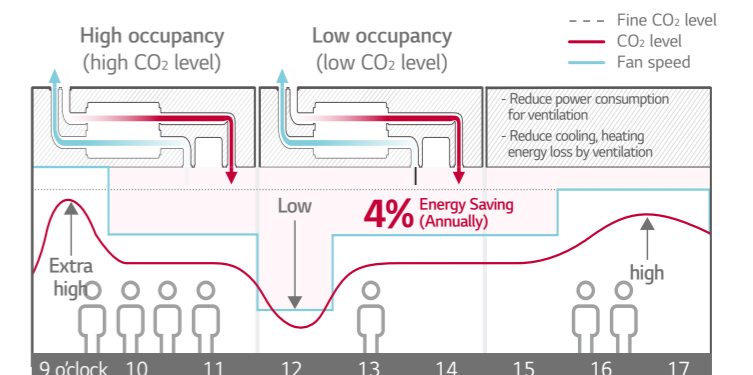
During summer nights, indoor heat can be discharged outdoors and cool outdoor air can be brought indoors for energy savings.



※ This function is operated with 'Night Time Free Cooling' on remote controller (with MULTI V only)  
 ※ Energy saving ratio can be differed by weather condition.  
 ※ Test Condition  
 - Office (49,000ft<sup>2</sup>) / Occupancy : 30 / Area : London, UK  
 - ERV (1000 CMH) + MULTI V 4 (12HP) Unit Combination  
 - Other conditions are subject to BREEAM.

#### CO<sub>2</sub> Auto Operation

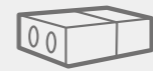
LG ERV reduces energy loss with auto fan speed control following CO<sub>2</sub> level



※ This function is operated with 'Night Time Free Cooling' on remote controller (with MULTI V only)  
 ※ Energy saving ratio can be differed by weather condition.  
 ※ Test Condition - Office (49,000ft<sup>2</sup>) / Occupancy : 30 / Area : London, UK  
 - ERV (1000 CMH) + MULTI V 4 (12HP) Unit Combination  
 - Other conditions are subject to BREEAM.

KEY FEATURES FOR INDOOR UNITS

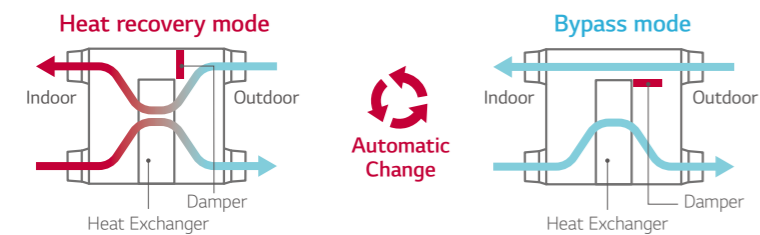
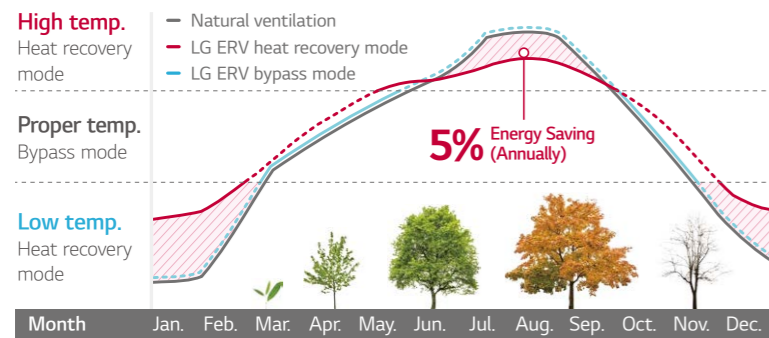
# ENERGY RECOVERY VENTILATION (ERV)



| EFFICIENCY |

## Seasonal Auto Operation

LG ERV senses outdoor temperature and operates automatically following weather condition.



※ This function is operated with 'Auto' mode by wired remote control.  
 ※ Energy saving ratio can be differed by weather condition.  
 ※ Test Condition - Office (49,000ft<sup>2</sup>) / Occupancy : 30 / Area : London, UK  
 - ERV (1,000 CMH) + MULTI V 4 (12HP) Unit Combination  
 - Other conditions are subject to BREEAM.

| COMFORT & RELIABILITY |

## CO<sub>2</sub> Level Monitoring

CO<sub>2</sub> sensor senses CO<sub>2</sub> level in the room. Users can monitor CO<sub>2</sub> level on new wired remote controller, and ERV controls the fan speed automatically following the level.

### CO<sub>2</sub> Level Visualization

CO<sub>2</sub> sensor senses indoor CO<sub>2</sub> level and displays it on new wired remote controller.



### Main display

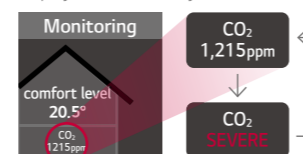
If the CO<sub>2</sub> level is above 900ppm in the room, the red mark is on.



※ The remote controller screen image may change.  
 ※ Applicable to only Standard III, Premium remote controller.

### Further information

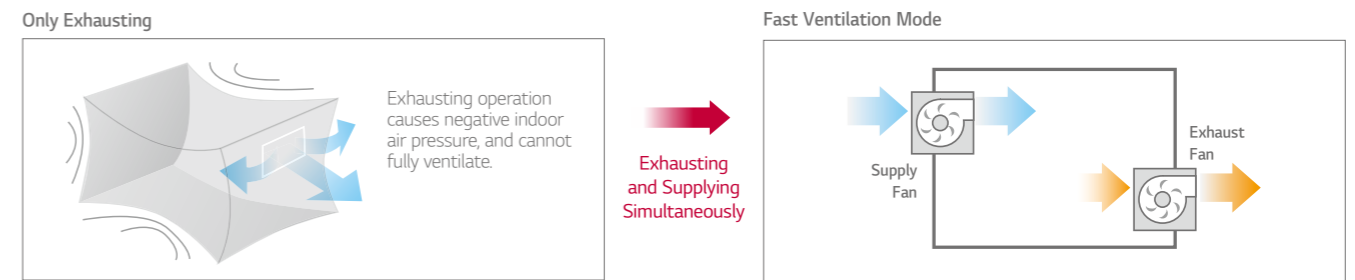
CO<sub>2</sub> level and room condition are displayed continuously.



| CONVENIENCE |

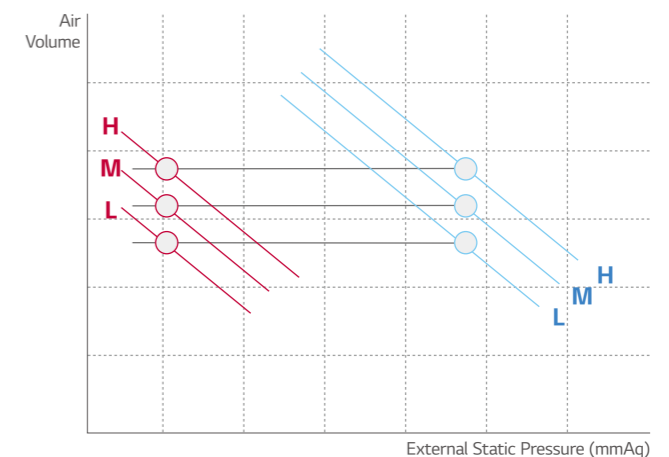
## Fast Ventilation Mode

Fast ventilation mode prevents the spread of contaminants under negative indoor pressure, and makes indoor air fresh and comfortable quickly.



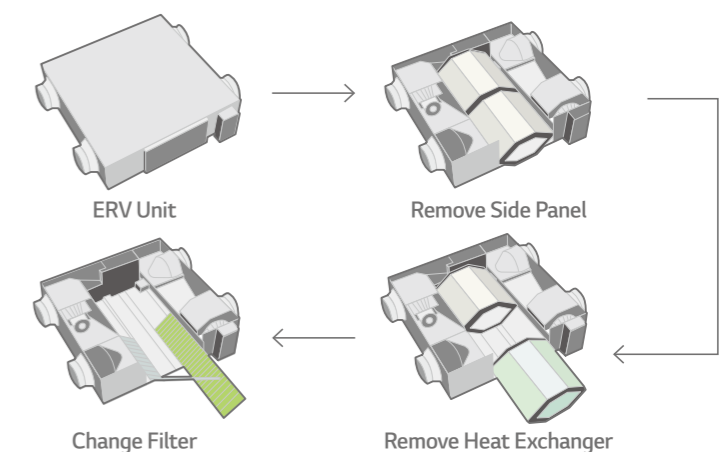
## External Static Pressure Control

The high static pressure fan can control the air volume depending on the length of the duct. It is also easy to control the pressure level by using the remote controller for a more flexible duct installation and easier testing.



## Easy Cleaning and Filter Change

Filter can be conveniently changed and cleaned.



KEY FEATURES FOR INDOOR UNITS

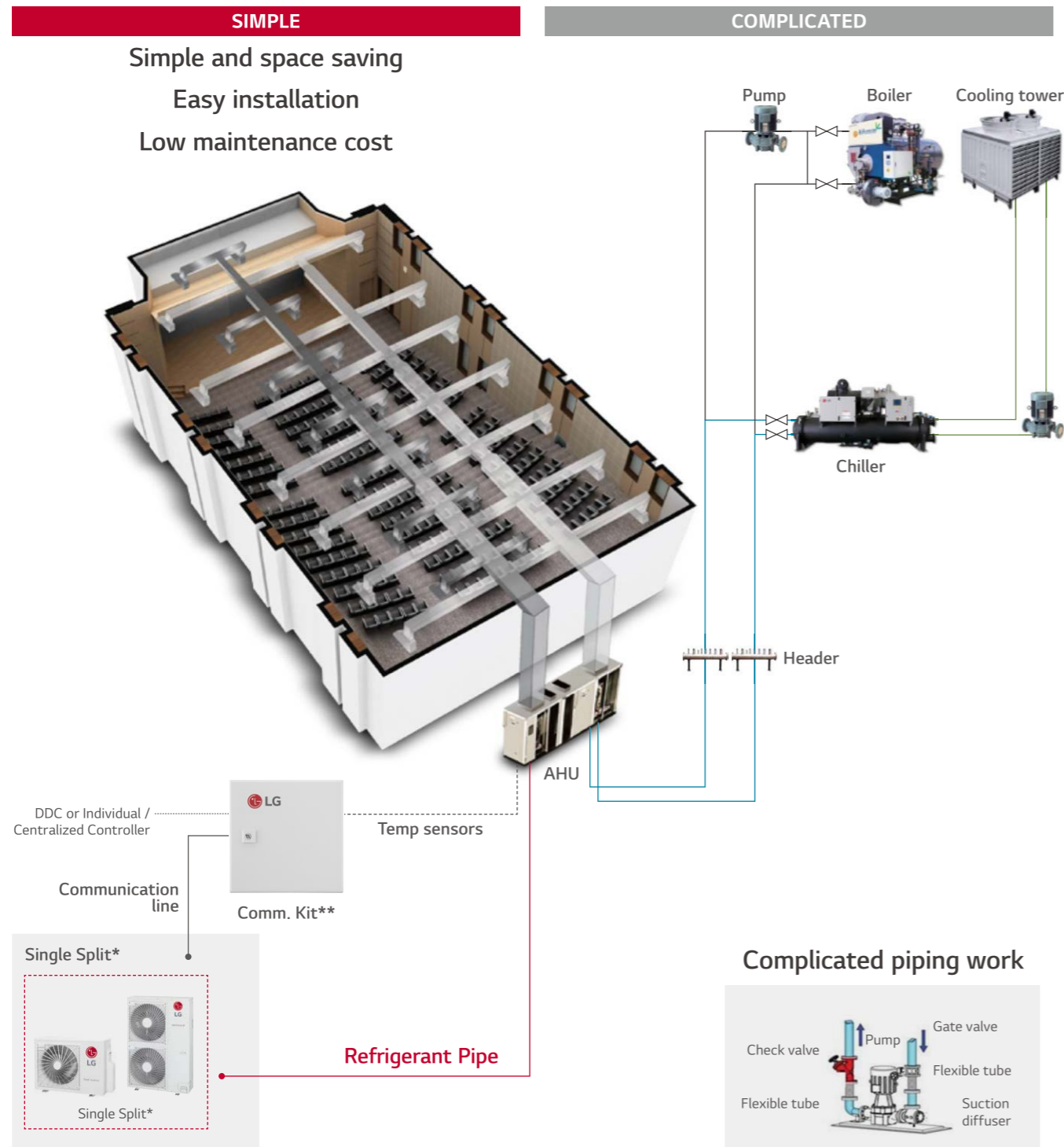
# AHU COMBINATION



| AHU COMBINATION |

## Connection with AHU (Single Split)

Single split can be connected to AHU using communication kit.



\* The single model can be applied only to UUB1, UUC1, UUD1, UUD3

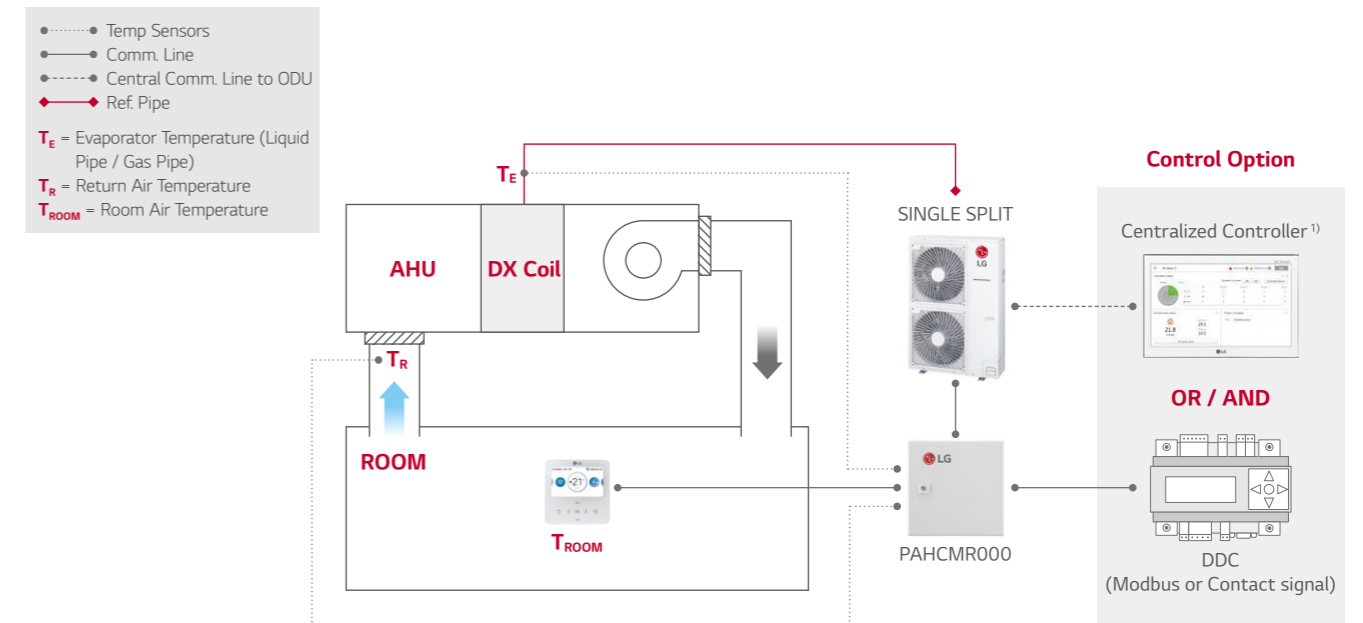
\*\* Model name of communication kit  
- RA air temperature control : PAHCMR000  
- SA air temperature control : PAHCMS000

| AHU COMBINATION |

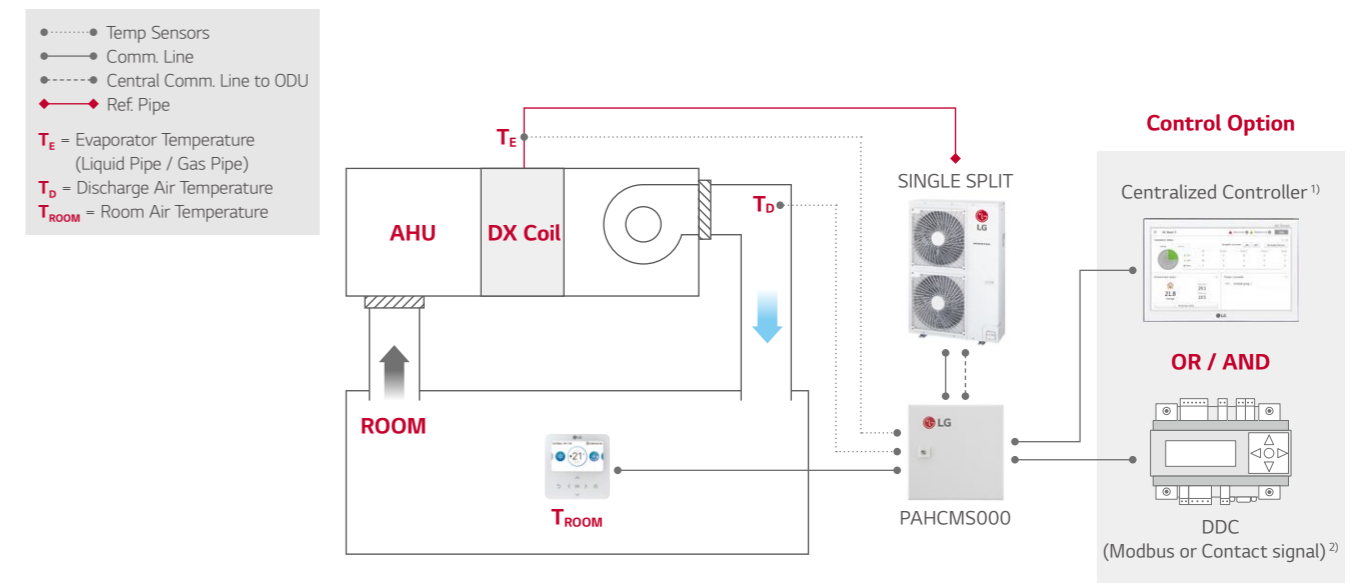
## Air Handling Applications

Economically feasible solution for pair application with air handling units.

### Return/Room Air Temperature Control



### Discharge Air Temperature Control



1) PI485(PMNF14A1) is required for using centralized controller.

2) In case of applying DDC with contact signal, discharge air temperature should be measured and controlled by DDC.

3) For more detail, please refer to the PDB of AHU Communication Kit.

KEY FEATURES FOR THERMA V

# MAIN TECHNOLOGY



## | EXCELLENT PERFORMANCE & EFFICIENCY |

### Low GWP Refrigerant R32



#### Background

Due to accelerated global warming and the destruction of the ozone layer, various international conventions and meetings are held to enhance restrictions to the use of refrigerant or enforce the use of eco-conscious refrigerant R32 is internationally acclaimed for being eco-friendly. This low volume refrigerant is as efficient as any conventional refrigerant but boasts a 68% reduced global warming potential.



\* Applied model : R32 Series

#### Comparison & Benefit

R32 efficiently works even in small volume compared to existing R410A refrigerant, which decreases the potential hazard of global warming. Furthermore, R32 refrigerant is easy to recycle thanks to its single composition.

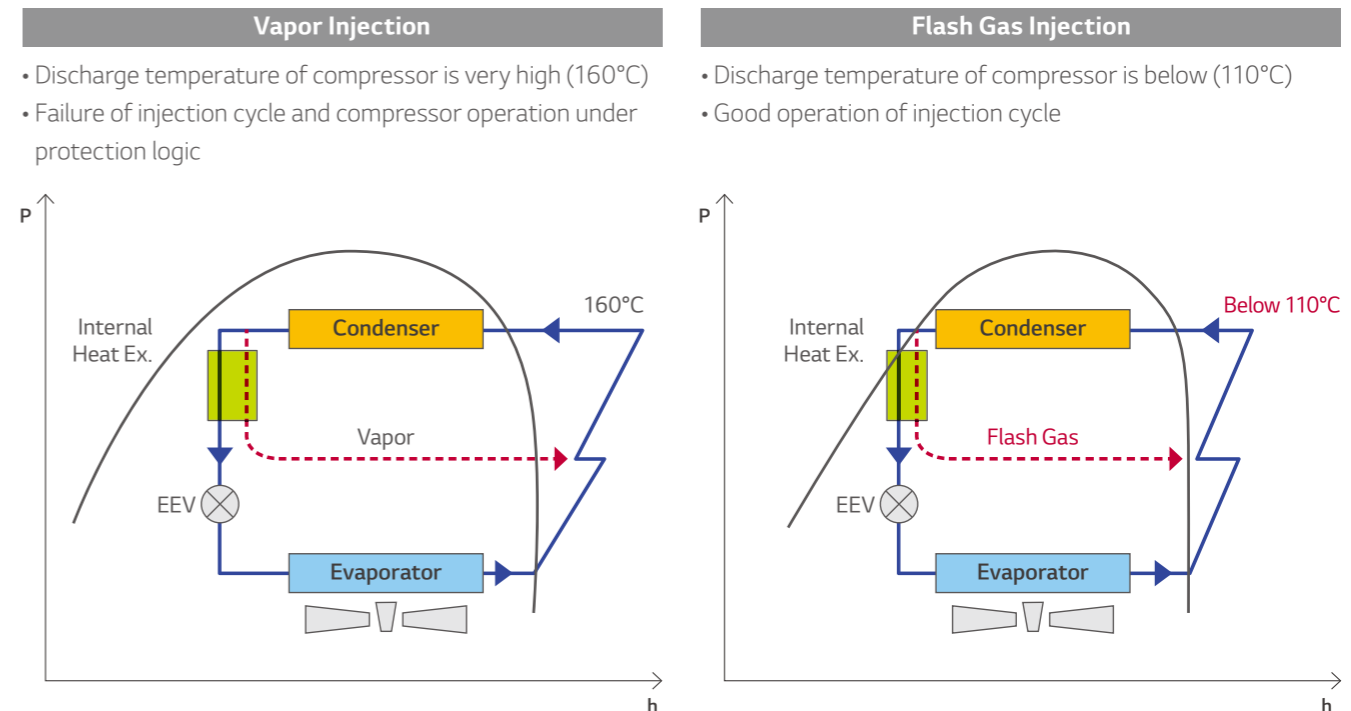
Description	R32	R410A
Low Global Warming Potential (GWP)	675	2088
Lower Amount of Gas Charge	Less	High
Higher System Performance	20%	
Simple Refrigerant Recyclability	Single component	Mixture R32 50% / R125 50%
High Capacity	High refrigerant compression rates lead to high capacity as compared to existing refrigerant R22 and R410A.	

Note : Ensure the LG Electronics installation manuals are consulted for correct installation measures and safety precautions.

### Flash Gas Injection

When applying R32 refrigerant to heat pump, it is very important to properly control the discharge temperature of the compressor. With the LG THERMA V R32 series, flash gas injection technology is applied to control the discharge temperature of the compressor efficiently. As a result of this technology, the heating operation range is expanded and the heating performance at low ambient temperature is enhanced.

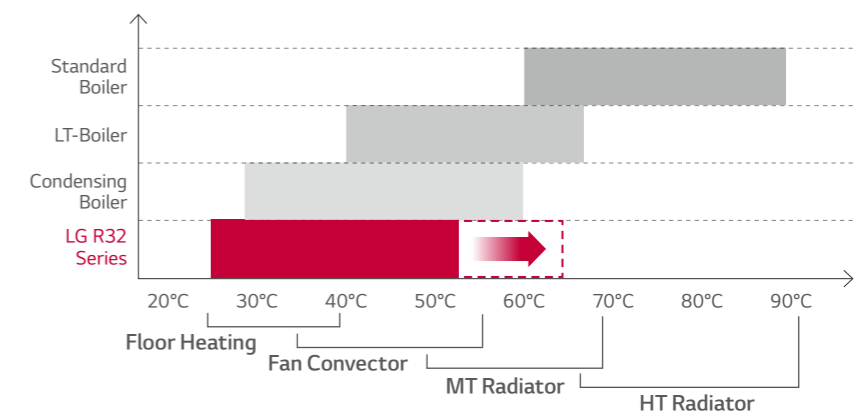
\* Applied model : R32 Series



### Wide Operation Range

With a Leaving Water Temperature (LWT) of up to 65°C, the THERMA V R32 series can integrate with a mid-temperature radiator, making this product line-up highly competitive for renovations as well as new build houses.

\* Applied model : R32 Series



# KEY FEATURES FOR THERMA V

## MAIN TECHNOLOGY



### | EXCELLENT PERFORMANCE & EFFICIENCY |

#### Black Fin Heat Exchanger

The THERMA V line-up includes a heat exchanger enhanced by black coating with enhanced epoxy resin for strong protection from various corrosive external conditions such as salt contamination and air pollution including factory fumes. This improvement in durability prolongs the product's lifespan and lowers both the operational and maintenance costs.



\* Applied model : R32 Series and High temp.



Longer lifespan, lower operation costs



Strengthened corrosion resistant coating

#### Black Fin

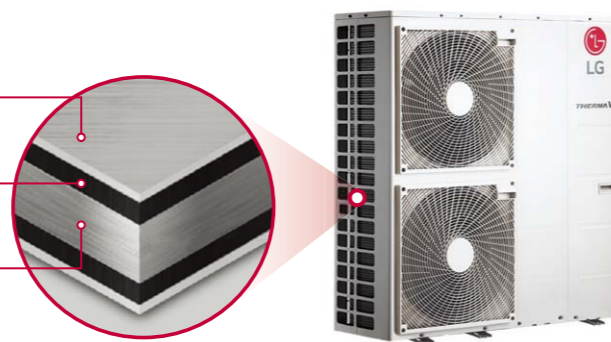
##### Hydrophilic Film (water flow)

The hydrophilic coating minimizes moisture build up on the fin.

##### Acryl + Epoxy + Melamine Resin (corrosion resistant)

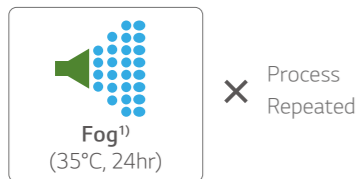
The black coating provides strong protection from corrosion.

##### Aluminum Fin



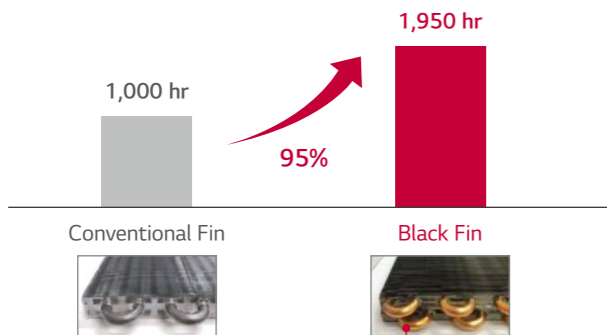
#### SST (Salt Spray Test)

• Test Process



Test process is conducted according to ISO 9227.  
1) Salty water concentration : NaCl aqueous solution (5%)

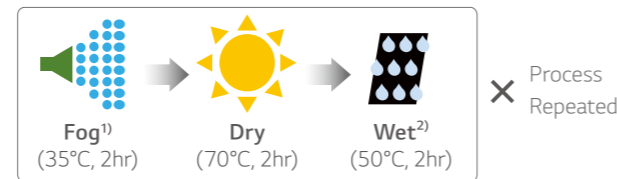
• Test Result (5% area of defects compared to initial)



100% copper material to prevent corrosion & refrigerant leakage

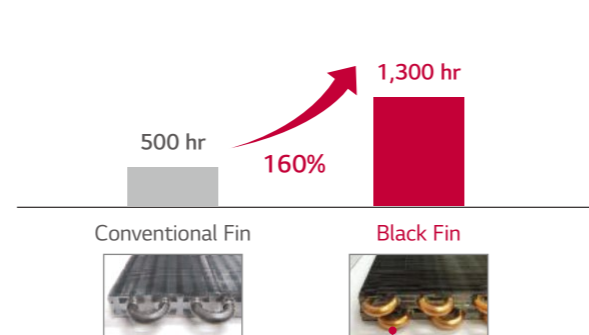
#### CCT (Cyclic Corrosion Test)

• Test Process



Test process is conducted according to ISO 14933.  
1) Salty water concentration : NaCl aqueous solution (5%)  
2) Deionized water  
※ Dry condition changed : 60°C, 4hr → 70°C, 2hr

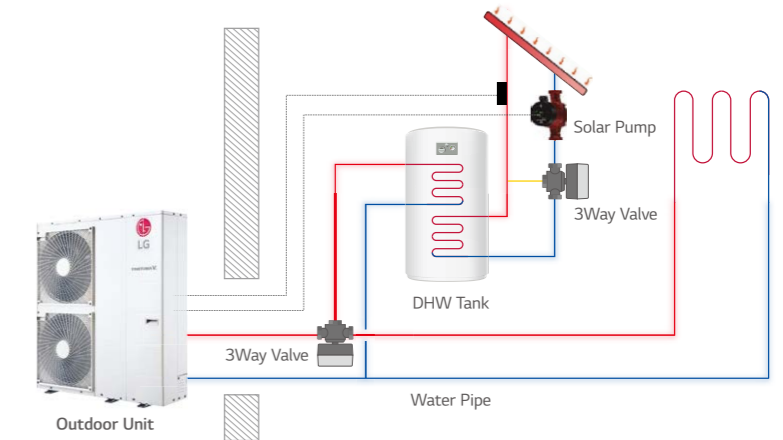
• Test Result (5% area of defects compared to initial)



100% copper material to prevent corrosion & refrigerant leakage

#### Combination with Solar Thermal System

THERMA V can combine with the solar thermal system enabling water heating in the Domestic Hot Water (DHW) tank. It first measures the temperature difference between the solar collector and DHW tank and begins to heat up if the solar collector temperature is higher than the DHW tank.



\* Applied model : R32 Series, R410A Split Hydro Box

\* Mandatory accessory : Solar Thermal Kit (PHLLA) is required except for R32 Hydrosplit which needs PT-1000 type sensor (field supply).

#### Energy State

THERMA V is operated automatically according to the status signals received from power supply companies. This function can correspond to each country's specific tariff for heat pump application on smart grids.

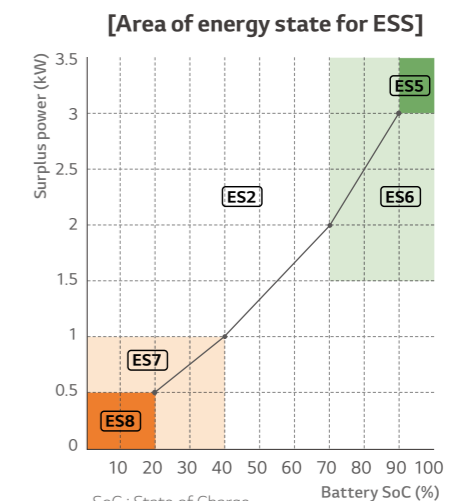
\* Applied model : R32 Hydrosplit, R32 Monobloc, R32 Silent Monobloc R32 IWT, R32 split, R410 split and High Temp. models have limited energy state function (ES1 - ES4 only). For more detail, please refer to the installation manual.

Energy States	Description				Operating Mode
	Smart Grid (Contact)	ESS (Modbus)	Operation Mode	Battery Charged Status	
ES1	Operation Off				Forced off to avoid peak load
ES2	Normal		Normal		Normal operation
ES3*	On Recommend				Changed target temperature higher (Heating : +2°C / DHW : +5°C)
ES4*	On Command				Changed target temperature higher (DHW : 80°C)
ES5**			On Command (Step2)		Changed target temperature higher (Heating : +5°C, Cooling : -5°C, DHW : +30°C)
ES6**			On Recommend (Step1)		Changed target temperature higher (Heating : +2°C, Cooling : -2°C, DHW : +10°C)
ES7**			Energy Saving		Changed target temperature lower (Heating : -2°C, Cooling : +2°C)
ES8**			Super Energy Saving		Changed target temperature lower (Heating : -5°C, Cooling : +5°C)

\* Contact signal designated ES3 and ES4 can be changed to ES5 - ES8.

\*\* Offset values of heating, cooling and DHW are changeable.

\*\*\* Therma V can connect not only ESS but also 3rd party controller through Modbus, in that case, ES1 to ES8 are used.



• SoC : State of Charge  
• Surplus Power (SP) = PV Power - Load Power  
• Area of Energy State for ESS can be adjusted by ESS.

# MAIN TECHNOLOGY



## | USER CONVENIENCE |

### Controller with Intuitive Interface

THERMA V is equipped with new remote controller which supports various functions.

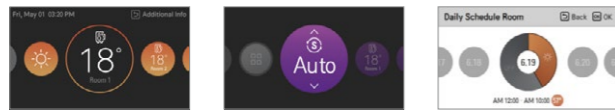
\* Applied model : R32 Series, R410A Split Hydro Box, High Temp.

#### Premium Design

- New modern design 4.3 inch color LCD display
- Capacitive touch button (especially on/off button turn on LED)

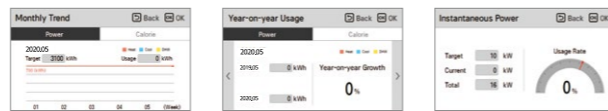
#### User Friendly Interface

- Information displayed with simple graphic, icon & text
- Navigation button, easy to use



#### Enhanced Energy Information with Simple Interface

- A clear view of instantaneous power consumption against target
- Accumulated power consumption and produced heat energy per week, month or year



#### Convenient Functions

- Optimize schedule setting logic
- Set the period, date, on/off time, operation mode, target temp. easy installation setting

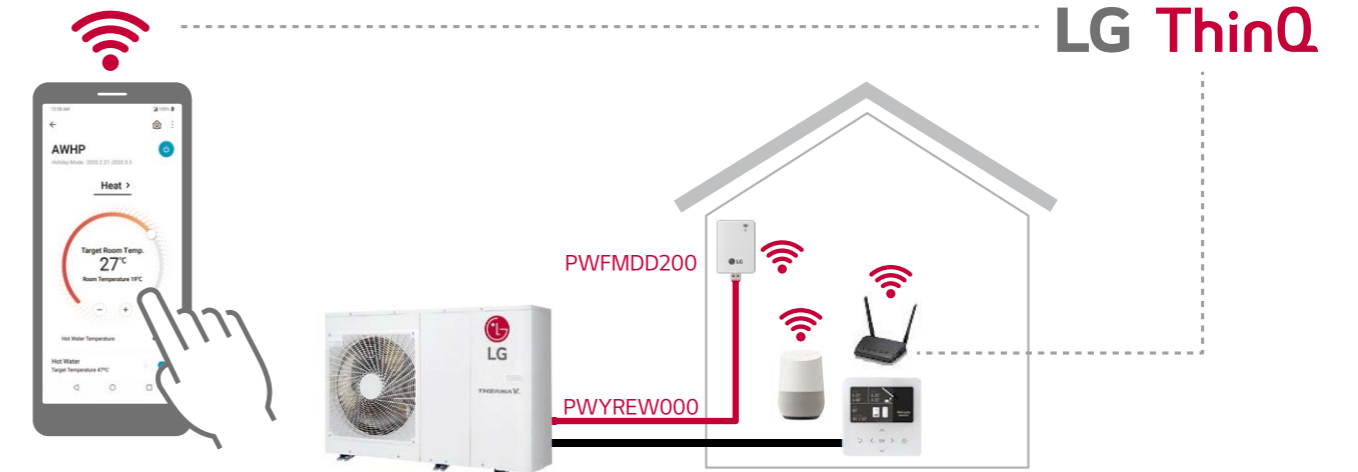


### LG Own Wi-Fi Solution

Access your THERMA V anytime from anywhere.



\* Applied model : R32 Series, R410A Split Hydro Box, High Temp.



\* Search "LG ThinQ" on Google market or App store, then download the app.  
 \* Google home voice is supported in United Kingdom, France, Germany, Spain, Italy, Austria, Ireland and Portugal.  
 \* Mandatory accessory : PWFMD200 (LG Wi-Fi modem) and PWYREW000 (10m extension connect cable in between THERMA V indoor and Wi-Fi modem)



#### Simple Operation by LG ThinQ

- Operation on/off
- Operation mode selection
- Current temperature
- Temperature setting
- On/off reservation Scheduling
- Energy monitoring
- ESS monitoring
- Silent mode reservation
- Holiday mode
- Quick DHW heating

#### Simple Operation by Google Voice

- Operation on/off (including DHW heating)
- Operation mode selection





# KEY FEATURES FOR THERMA V

## MAIN TECHNOLOGY



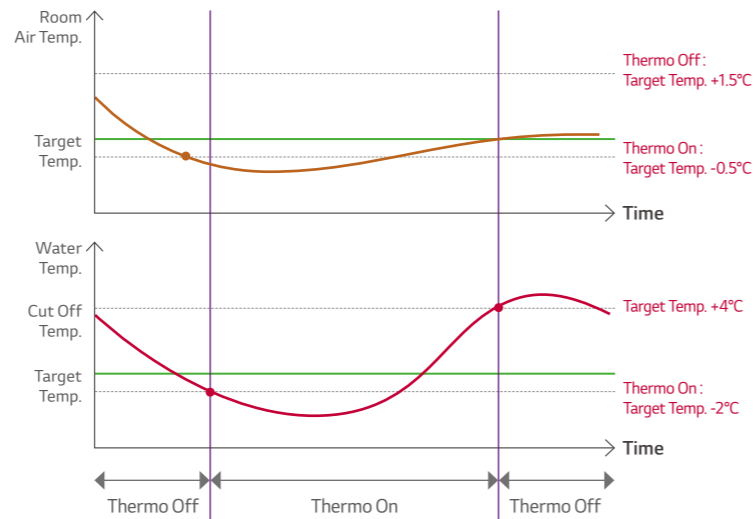
### | USER CONVENIENCE |

#### Various Temperature Control Options

Various temperature control options are possible for the user's comfort and convenience, to include the newly added simultaneous control option (room and water temperature).

\* Applied model : R32 Series, R410A Split Hydro Box, High Temp.

- Control based on leaving water temperature
- Control based on entering water temperature
- Control based on room air temperature
- Control based on room air and water temperature simultaneously

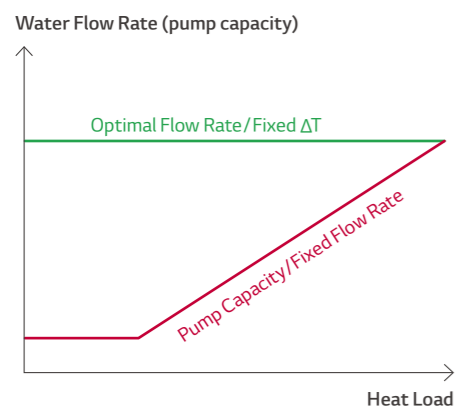


- Thermo On : When satisfied both room air temp condition and water temperature condition
- Thermo Off : When satisfied room air temp condition or water temperature condition

#### Advanced Pump Control Options

\* Applied model : R32 Hydrosplit

Various pump control options are possible for the user's convenience. With the R32 Hydrosplit, the water flow rate can be changed as per heat load condition, therefore it makes more energy efficient operation during low load condition.



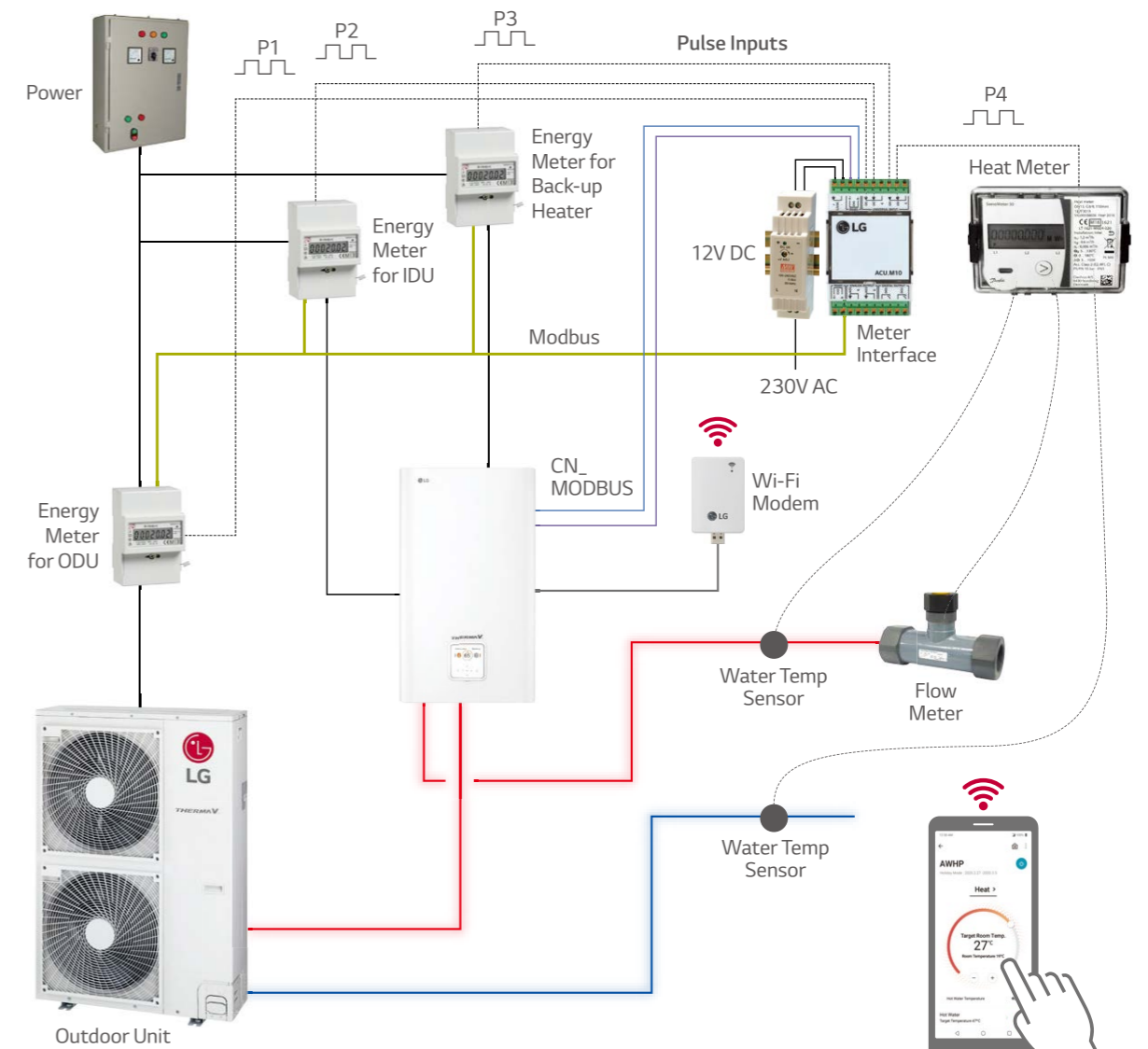
Options	Description	Water Flow Change as per Load Condition
Pump Capacity	It operates with the capacity set for the water pump. (range 10 - 100%)	No
Fixed Flow Rate	Automatically controlled to maintain the set flow rate. (range 17 - 46 LPM)	No
Fixed ΔT*	Automatically controlled to maintain the set ΔT. (range 5 - 13°C)	Yes
Optimal Flow Rate (default)	ΔT is changed as per target temperature.	Yes

\*ΔT = temperature difference between inlet and outlet water temperature.

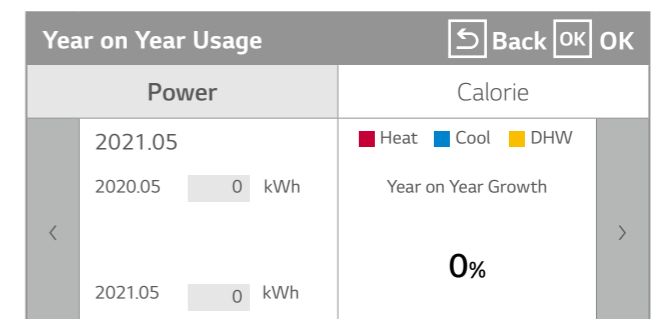
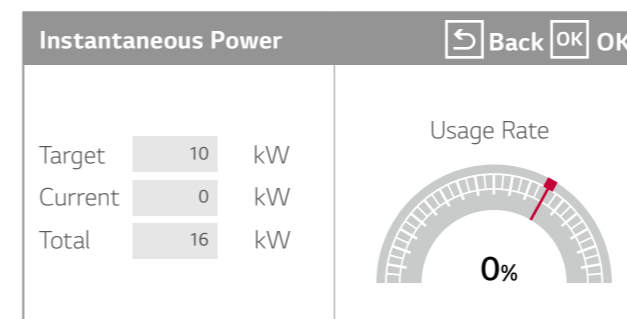
#### Energy Information Monitoring

\* Applied model : All Line-up except R410A IWT

Power consumption and heat provided by the THERMA V can be measured and monitored on the remote controller using meter interface.



\* Mandatory accessory : PENKTH000 (Meter Interface)



# KEY FEATURES FOR THERMA V

## MAIN TECHNOLOGY



### | USER CONVENIENCE |

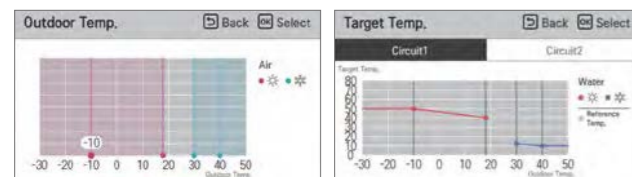
## Seasonal Auto Mode

In this mode, the target temperature and operation mode will be changed automatically according to the outdoor temperature.

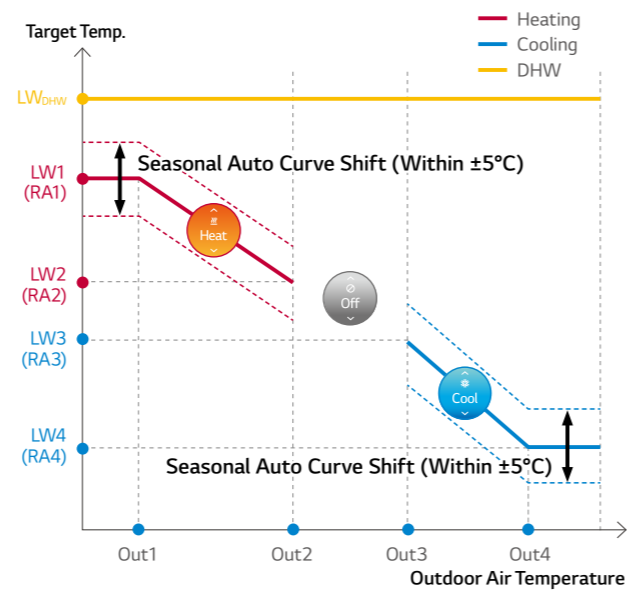
\* Applied model : R32 Series, R410A Split Hydro Box Detailed set values and ranges are differ by product. For more detail, please refer to the installation manual for each product.

Setting	Description	Range (°C)	Default (°C)	
			Circuit 1	Circuit 2
Out1	Heating Lower Ambient Temp.	-25 - 35	-10	
Out2	Heating Higher Ambient Temp.		18	
Out3	Cooling Lower Ambient Temp.	10 - 46	30	
Out4	Cooling Higher Ambient Temp.		40	
LW1	Heating Higher Water Temp.	Use Heater: 15 - 65	50	35
LW2	Heating Lower Water Temp.	No Heater: 20 - 65	40	28
LW3	Cooling Higher Water Temp.	Use FCU: 5 - 27	12	18
LW4	Cooling Lower Water Temp.	No FCU: 16 - 27	10	16
RA1	Heating Higher Air Temp.	16 - 30	21	
RA2	Heating Lower Air Temp.	18 - 30	19	
RA3	Cooling Higher Air Temp.	18 - 30	21	
RA4	Cooling Lower Air Temp.	18 - 30	19	

\* This table is for R32 Hydrosplit.



\* The graphical seasonal auto mode setting is only possible with the R32 Hydrosplit.

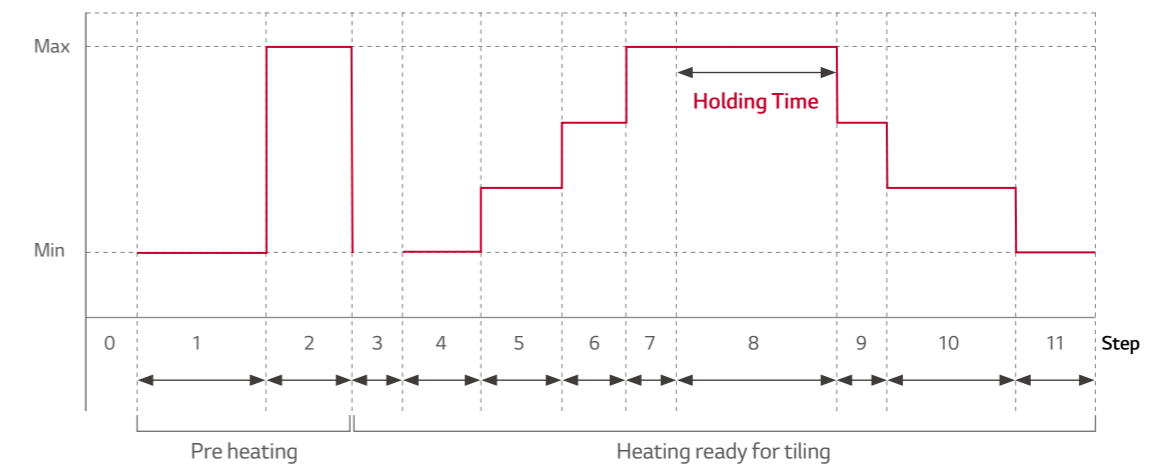


## Screed Drying Program

THERMA V has an automatic program for drying out the screed of an underfloor heating system during the construction of a house.

\* Applied model : R32 Series, R410A Split Hydro Box

Leaving Water Target Temperature (°C)

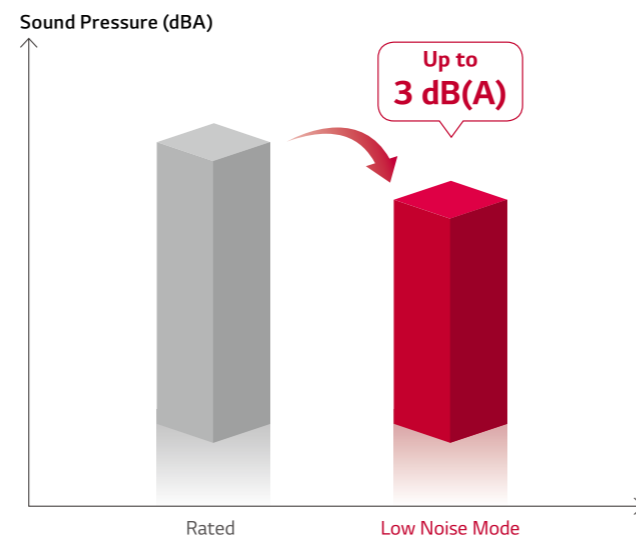
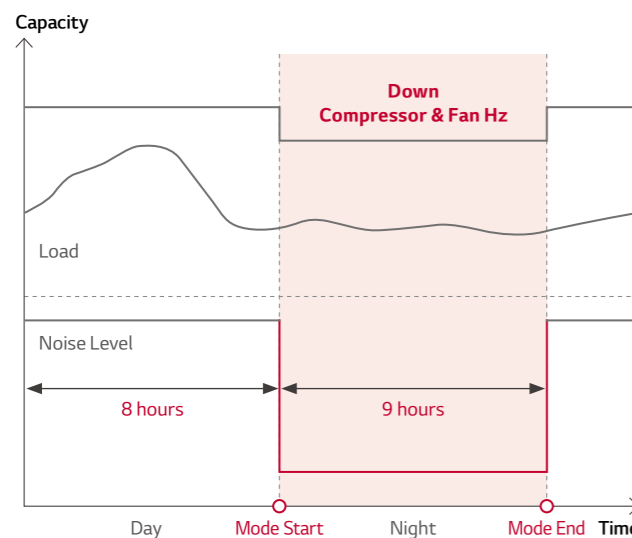


Step	1	2	3	4	5	6	7	8	9	10	11
Leaving Water Target Temperature (°C)	25	Max T	Off	25	35	45	Max T	Max T	45	35	35
Duration (Hours)	72	96	72	24	24	24	24	Holding Time	72	72	72

## Low Noise Mode & Scheduler

Low noise mode operation can be activated by remote controller and set on a weekly on/off schedule to reduce the unit's noise level.

\* Applied model : A II Line-up except High Temp

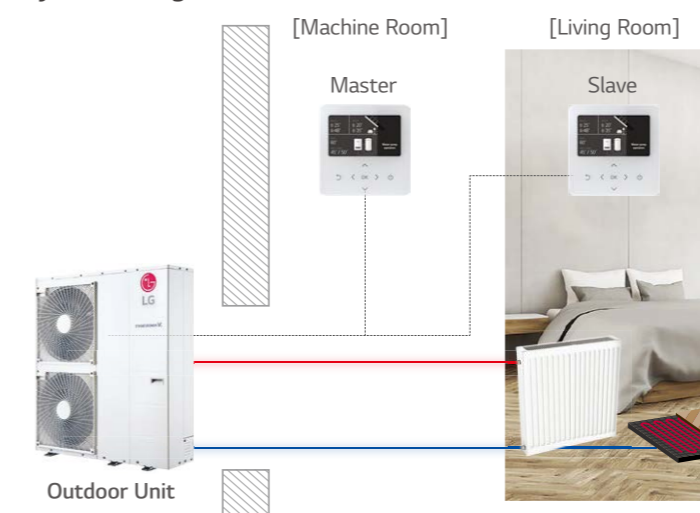


## 2 Remote Control

Enhanced convenience with an additional control installed in another residential area.

\* Applied model : All Line-up except R410A IWT

### System Diagram

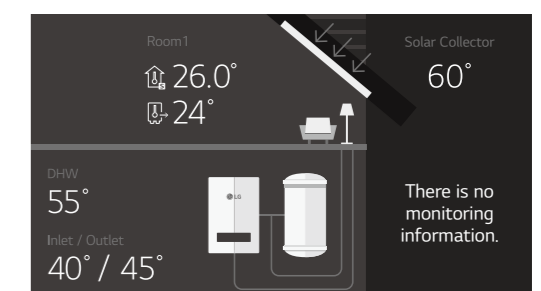


\* Master is for the installation setting.  
\* Slave is for user setting.

### Standard III (RS3) controller interface

THERMA V is operating based the room where slave controller is installed.

: Room air temperature sensed by slave remote controller



# MAIN TECHNOLOGY



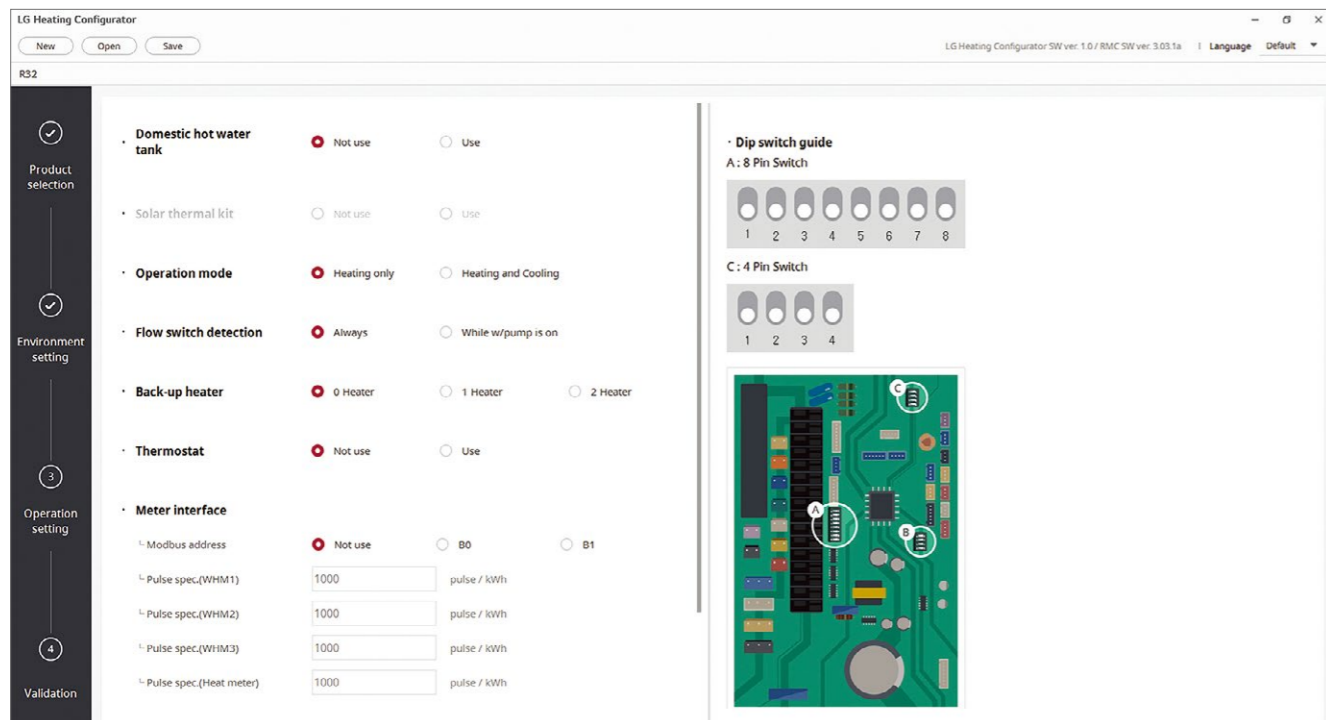
## | EASY INSTALLATION & MAINTENANCE |

### LG Heating Configurator

\* Applied model : R32 Series, R410A Split Hydro Box  
R32 IWT, R32 Hydrosplit will be supported within 2020.

#### Easy Installation Setting and Commissioning

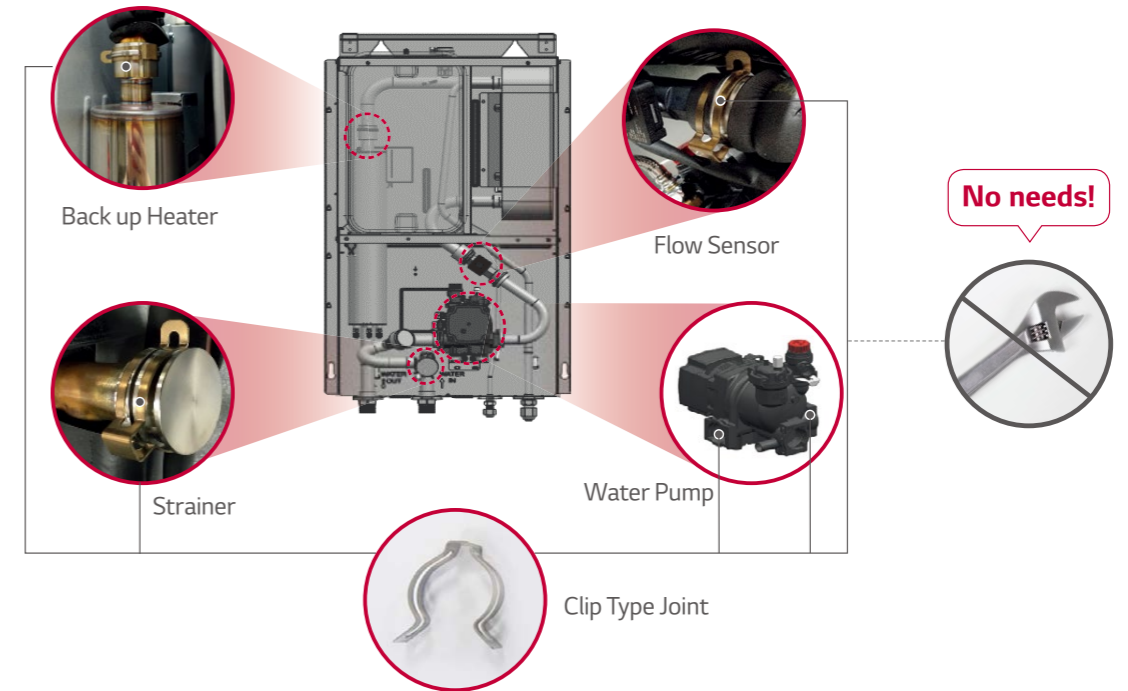
- Based on installation site information, installers can prepare presetting with the LG heating configurator and save data into a memory card from the office.
- Once on site, installers can simply insert memory card into the back of the remote control to activate configuration data.



### Clip Type Connection for Easy Maintenance

\* Applied model : R32 Series, R410A Split Hydro Box

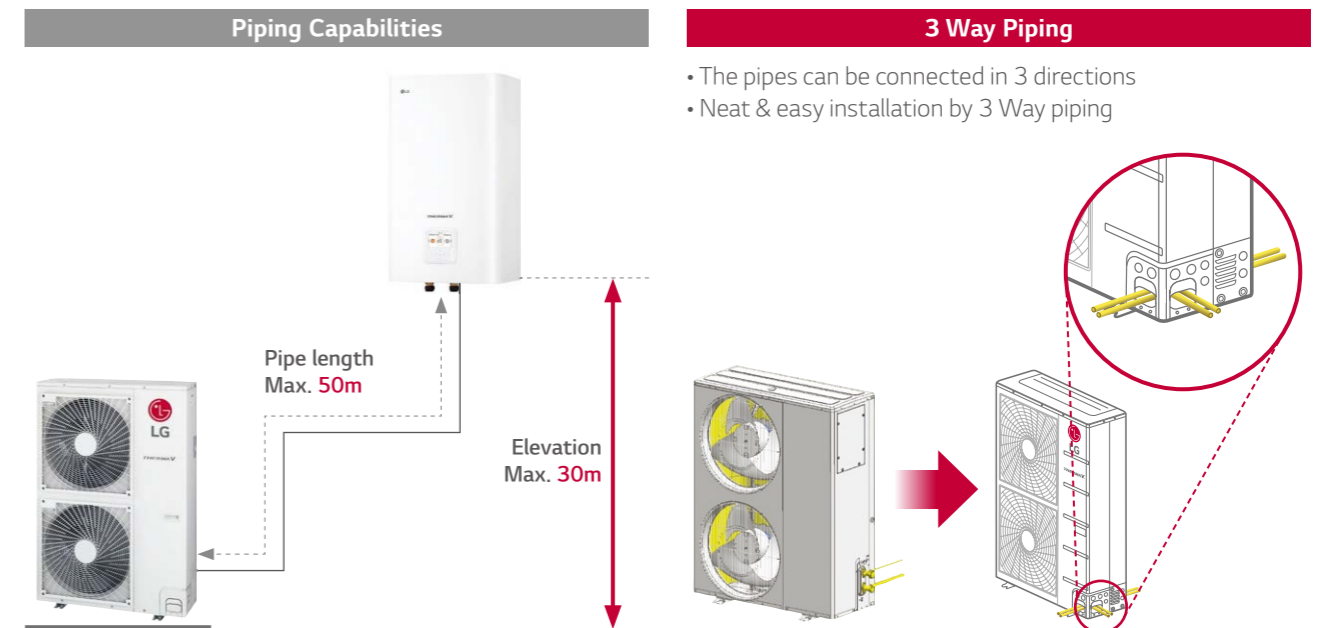
- Easy access to water pump and strainer (front panel)
- Clip type connection for components



### Flexible Refrigerant Piping Design

Long piping length and 3 Way piping enable flexible design and easy installation.

\* Applied model : R32 IWT, R32 Split, R410A Split, R410A IWT, High Temp.



# KEY FEATURES FOR APPLIED

## INVERTER SCROLL CHILLER



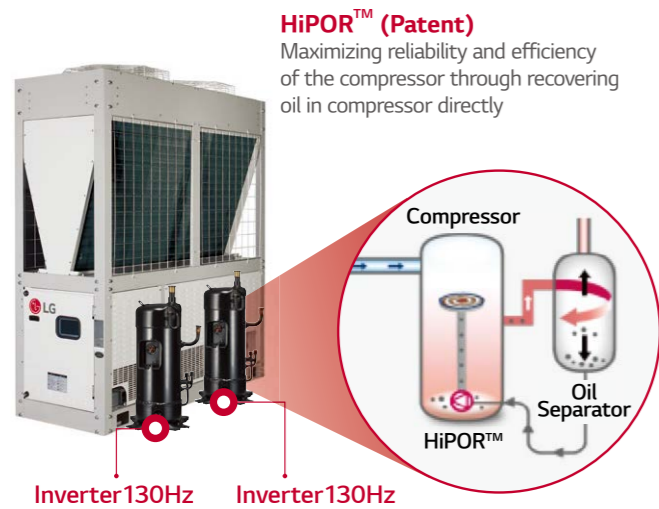
### | HIGH EFFICIENT INVERTER TECHNOLOGIES |

#### All inverter scroll compressor

All inverter scroll compressor with HiPOR™ (Patent) is applied to improve full load and part load energy efficiency.

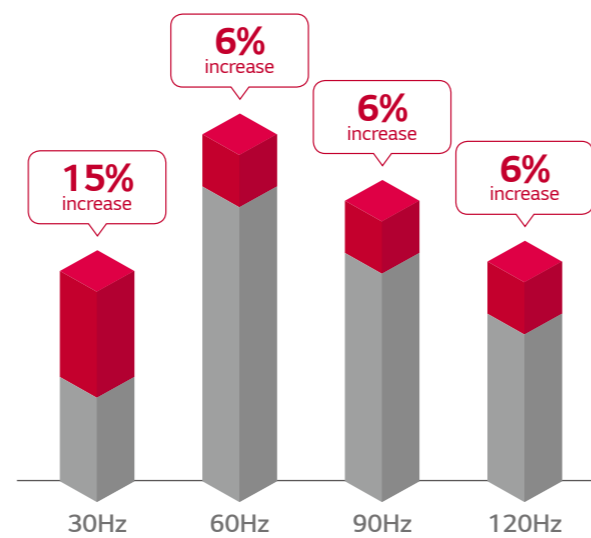
##### All Inverter System

Wide operation frequency range 30 ~ 130Hz



##### Compressor Efficiency

Compressor efficiency by Hz is increased through HiPOR™ application

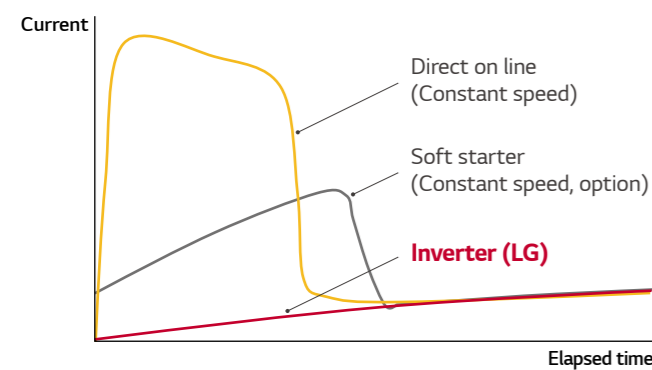


※ Test condition at Tc=54.4°C, Te=7.2°C

#### App. Inverter comp. vs Constant speed comp.

Inverter compressor is more stable and efficient solution than Constant speed compressor.

##### • Comparison of starting type



Compressor	Starting type	Starting current (Is / FLA*, %)
Constant speed	Direct on line	About 650 %
	Soft starter	200 ~ 350 %
Inverter (LG)	Inverter	No inrush current

\* FLA : Full load ampere

##### • Inverter's feature & benefits

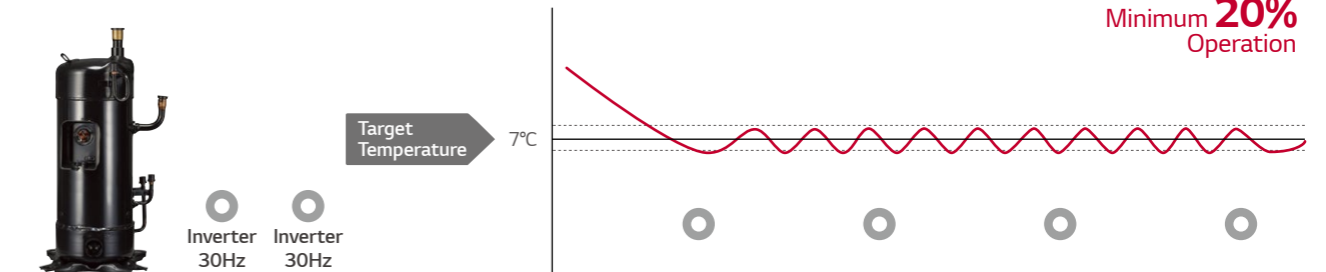
- WHEN STARTING**
  - Reduce starting torque below full load torque → **Mechanical wear ↓**
  - Decrease starting current under FLA → **Circuit breaker capacity ↓**
- WHEN OPERATING**
  - Low electric loss due to high value of the power factor\*\* → **Energy efficient**
  - Low power input in part load → **High SEER**
  - Continuously adjust compressor output according to the load (Compressor 15~125Hz) → **Save energy**

\*\* Power factor : Ratio between active power(kW) and total power(kVA)

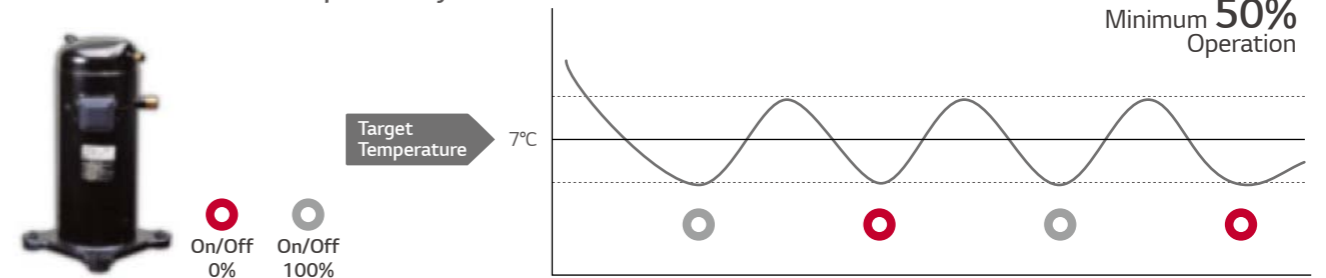
#### Lower load operation

20% part load operation and minimized water outlet temperature haunting with Inverter scroll compressors.

##### • LG Inverter Scroll Compressor



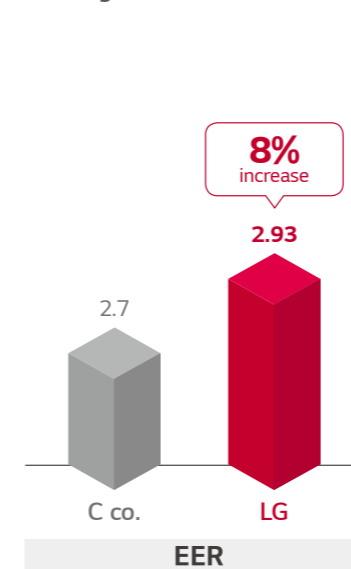
##### • Normal On/Off Multi Compressor System



#### High Energy Efficiency

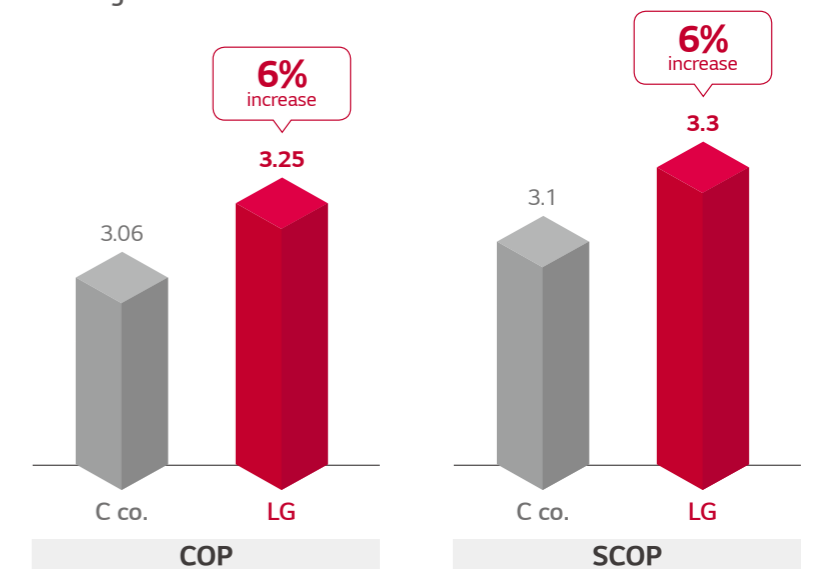
All inverter scroll compressors with Multi V technologies improve energy efficiency.

##### • Cooling Performance



※ 65 kW Heat pump model comparison

##### • Heating Performance



KEY FEATURES FOR APPLIED

# INVERTER SCROLL CHILLER

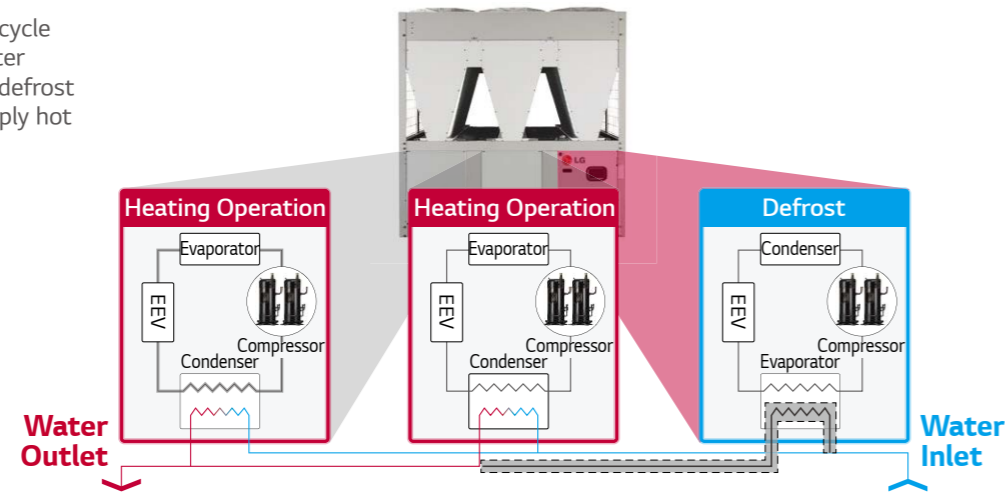


## | RELIABILITY & STABILITY |

### Continuous heating operation

Continuous heating minimizes the decrease of water outlet temperature during defrosting for multi circuit model.

Multi cycle can defrost each cycle individually to supply hot water continuously multi cycle can defrost each cycle individually to supply hot water continuously



\* Applied up to 6 scroll compressors per refrigerator

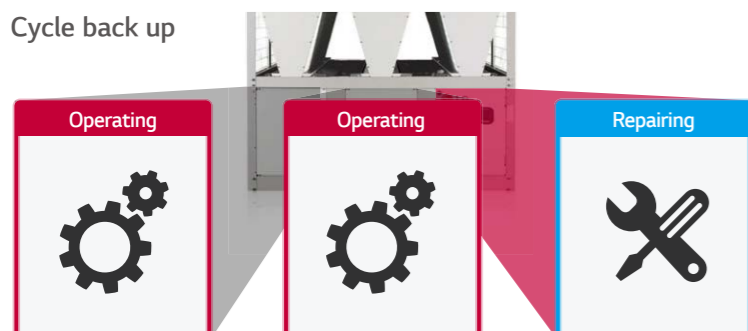
### Back up operation

If one compressor or one cycle has a trouble or needs to be repaired, backup operation helps the whole system to operate continuously.

#### Compressor back up



#### Cycle back up



### Corrosion resistance (Black Fin)



'Black Fin' heat exchanger is highly corrosion resistant, designed to perform in corrosive environments such as contaminated and humid condition.

### Black box function

Quick service can be done because operation data can be saved for 180 seconds before system failure.

#### Without Black Box Function

Check many failure causes and error codes in person

#### With Black Box Function

Search for the failure cause conveniently using recorded data

Take much service time and undergo trial and error

Save service time and diagnose it more accurately



※ 222kW comparison

KEY FEATURES FOR APPLIED

# INVERTER SCROLL CHILLER

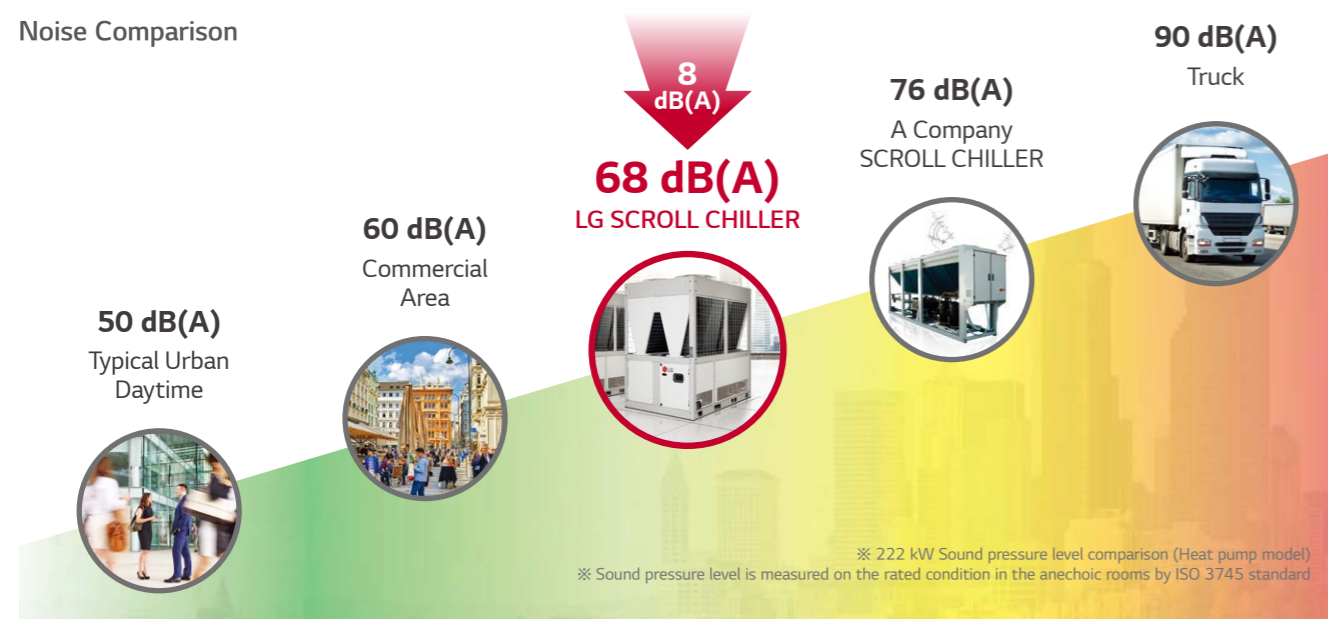


## | INVERTER SCROLL CHILLER CONVENIENCE |

### Low noise level

Lower noise can remove complains from noise pollution and provide a quieter environment.

Noise Comparison



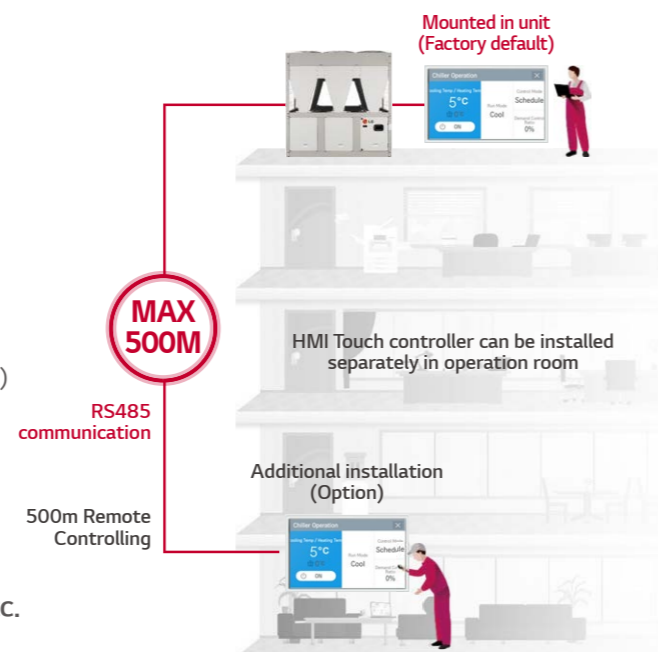
### HMI Touch Controller

High level control option is preinstalled such as cycle monitoring, schedule control and demand control with HMI touch controller.

#### User Friendly HMI Touch Controller

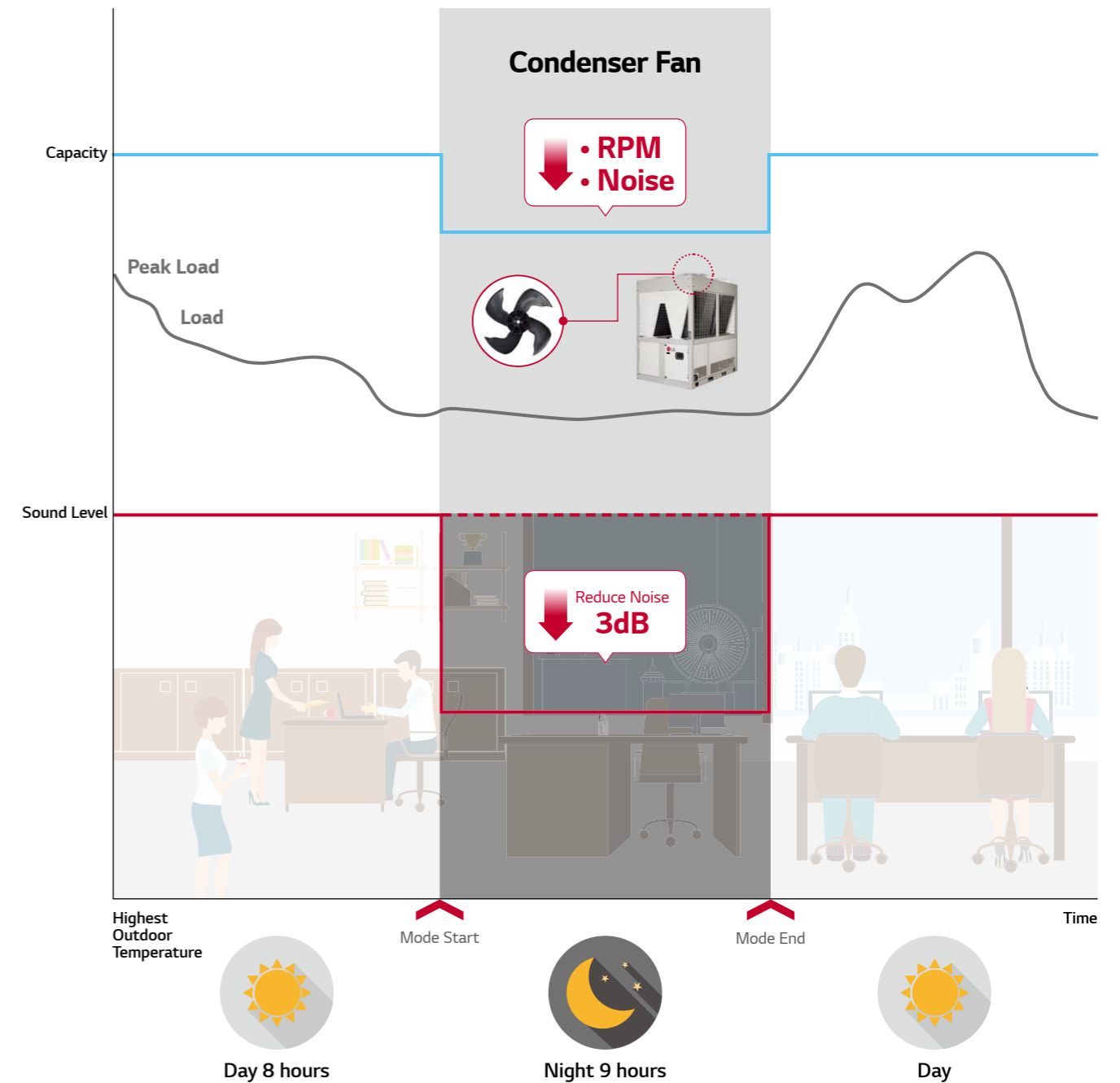


- Checking chiller information (Pump / Flow Status, Pump On / Off, Flow Switch On / Off Etc.)
- Monitoring chiller operation (Each Cycle Operation Status, Air Temperature Etc.)
- 5 chillers multiple control
- Scheduling function
- Anti-freezing function / displaying error history etc.
- RS485 1Port, SD Card (Memory)



### Silent operation function (Cooling Mode)

Silent operation function can reduce noise levels at night time by adjusting the fan RPM



※ 65kW Comparison

KEY FEATURES FOR APPLIED

# INVERTER SCROLL CHILLER



## | INVERTER SCROLL CHILLER CONVENIENCE |

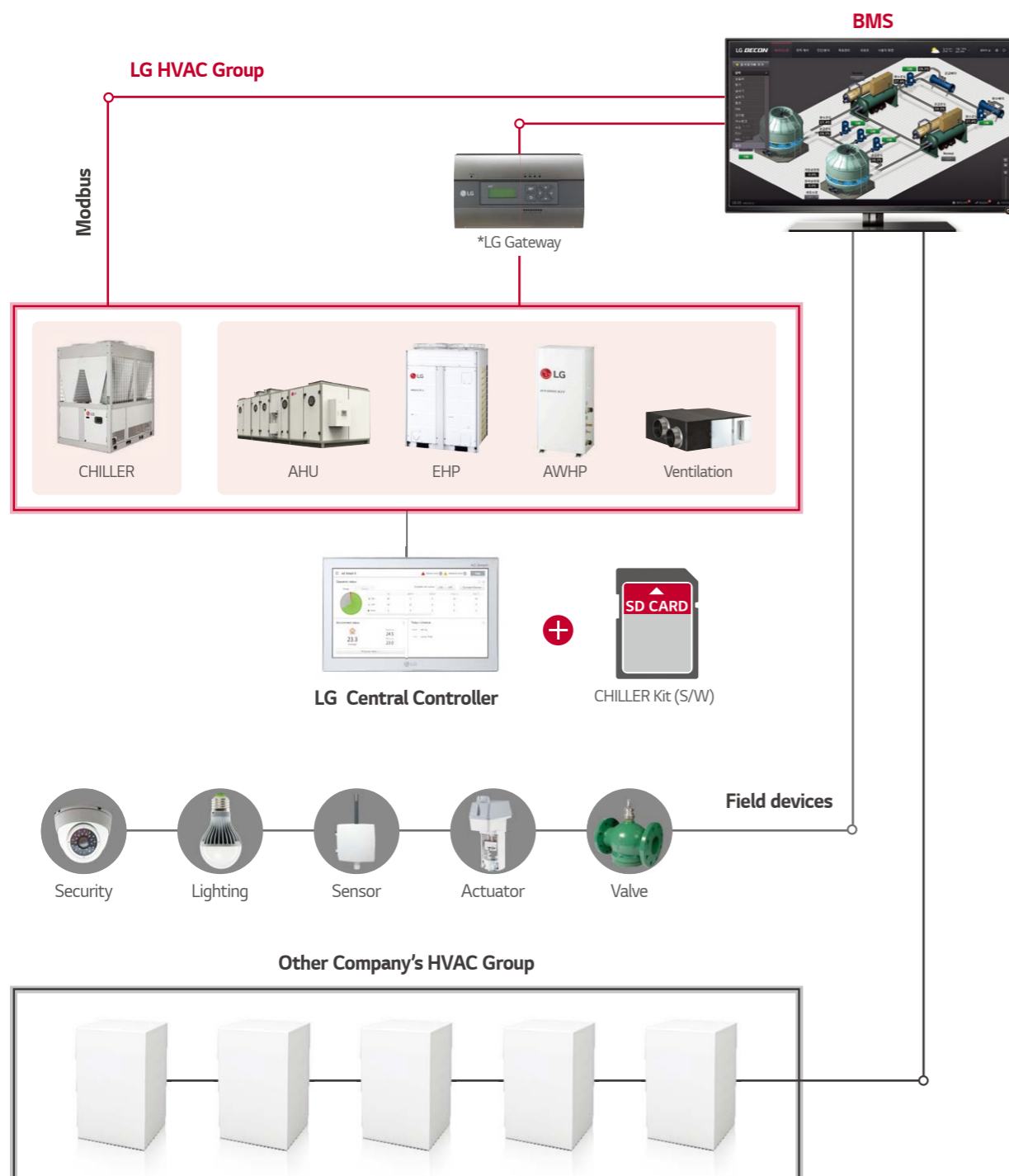
### Easy BMS interface

LG provides CHILLER controller system and BMS communication function.

### LG HVAC Group

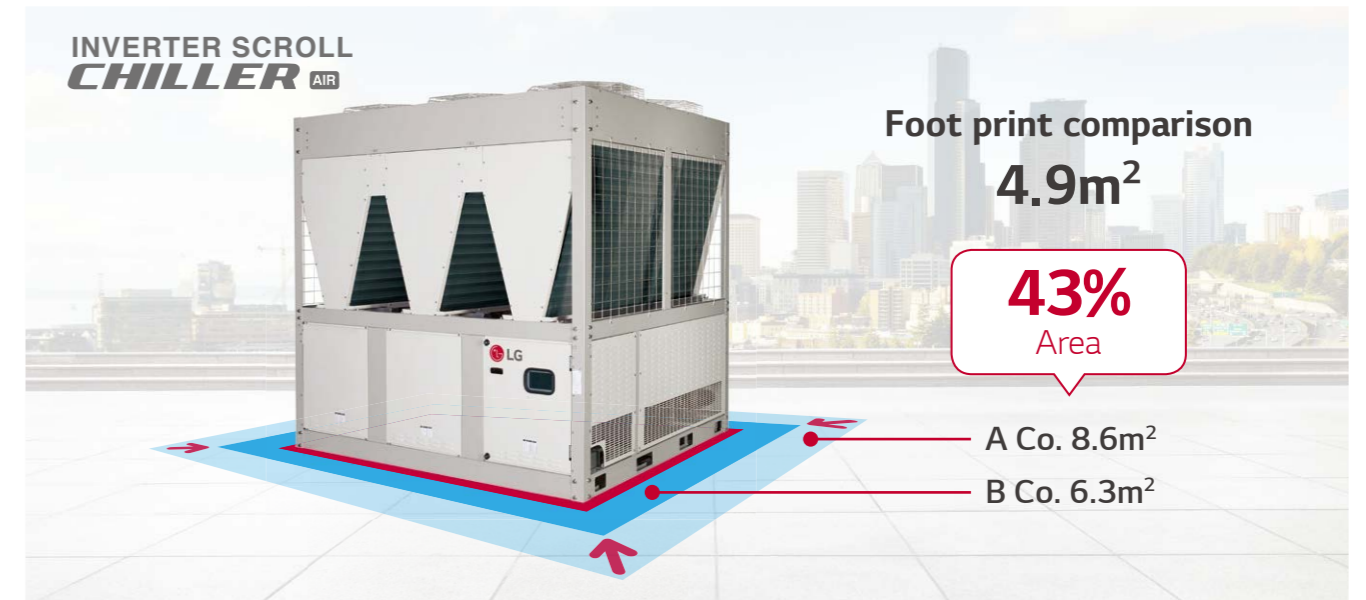
BMS : Building Management System

\*ACP 5/ AC Smart 5/ LONwork Gateway is unconvertible to LG Chiller. Direct Modbus connection is available.



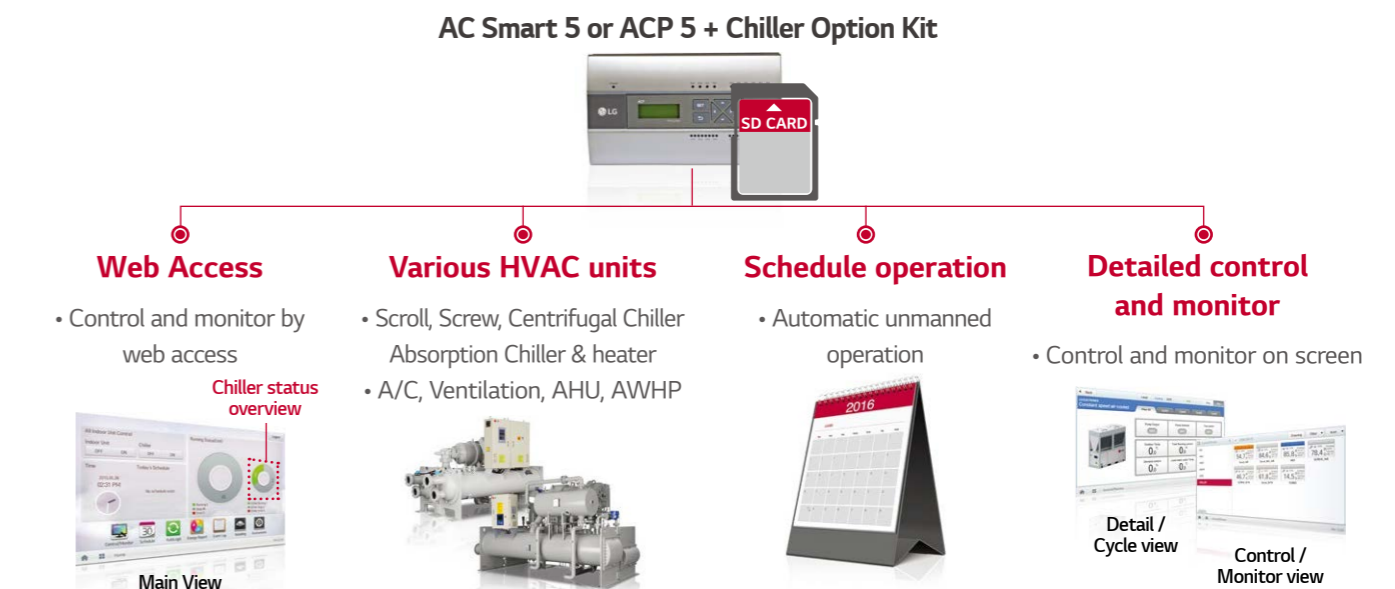
### Compact size

Compact size reduces concern about installation and service space.



### Centralized control of LG Chiller (option)

LG central controller 5 series (+Chiller kit) provide chiller remote control and cycle monitoring (ACP IV : Max. 10 chillers , AC Smart 5 : Max. 5 chillers).



# KEY FEATURES FOR APPLIED FCU (FAN COIL UNIT)



## | 4WAY CASSETTE |

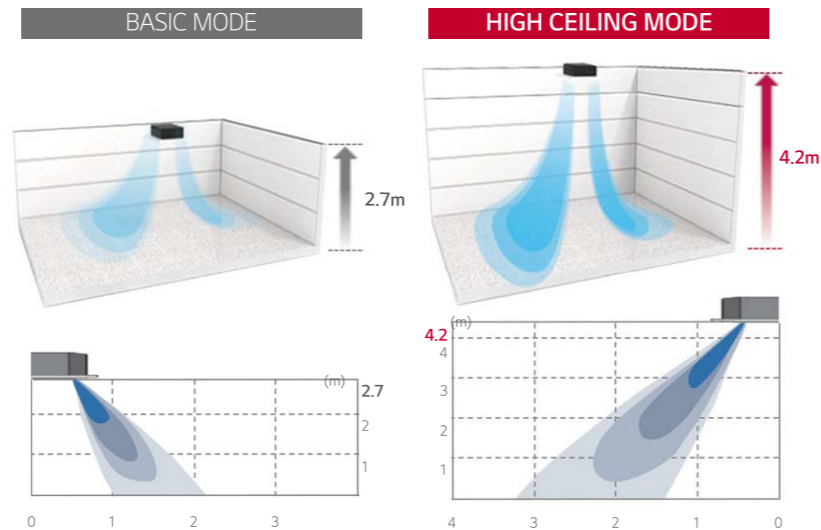
### Wi-Fi Remote Control



Control your air conditioners using the smart devices as Android or iOS based smartphones and voice commands via Google assistant.

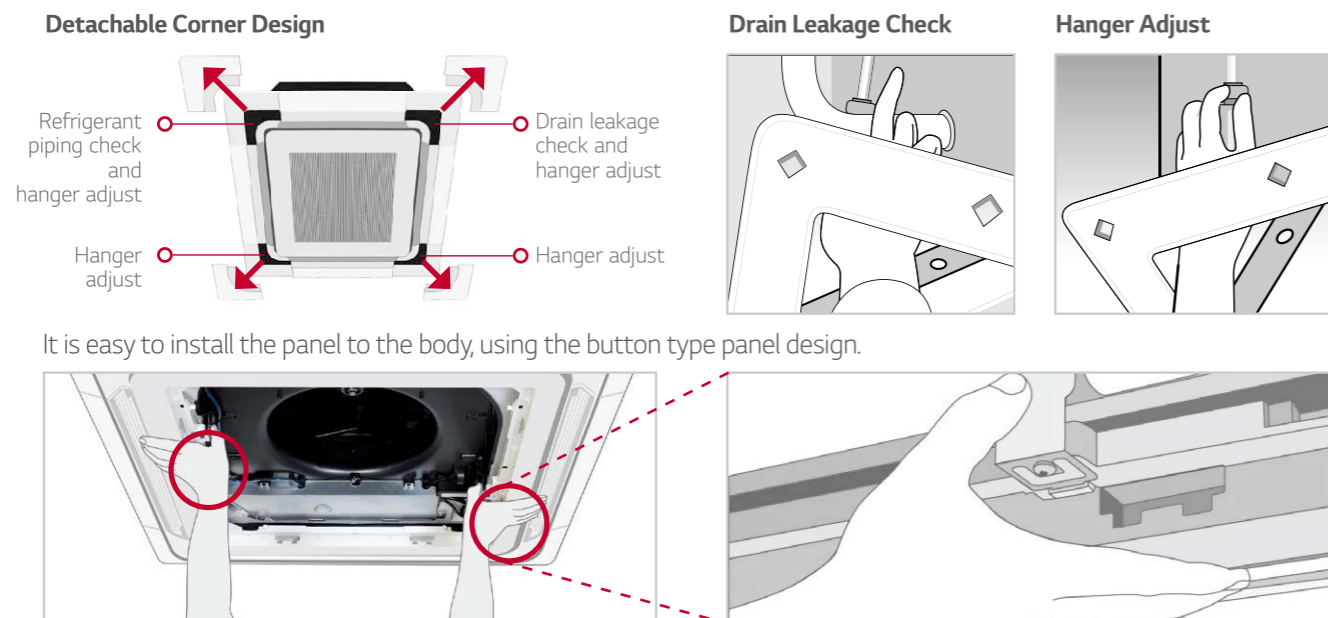
### High Ceiling Mode

Airflow in a space with a 4.2m ceiling height is possible with this indoor unit. Furthermore, air flow can be strengthened by adjusting the fan speed.



### Convenient Panel Installation

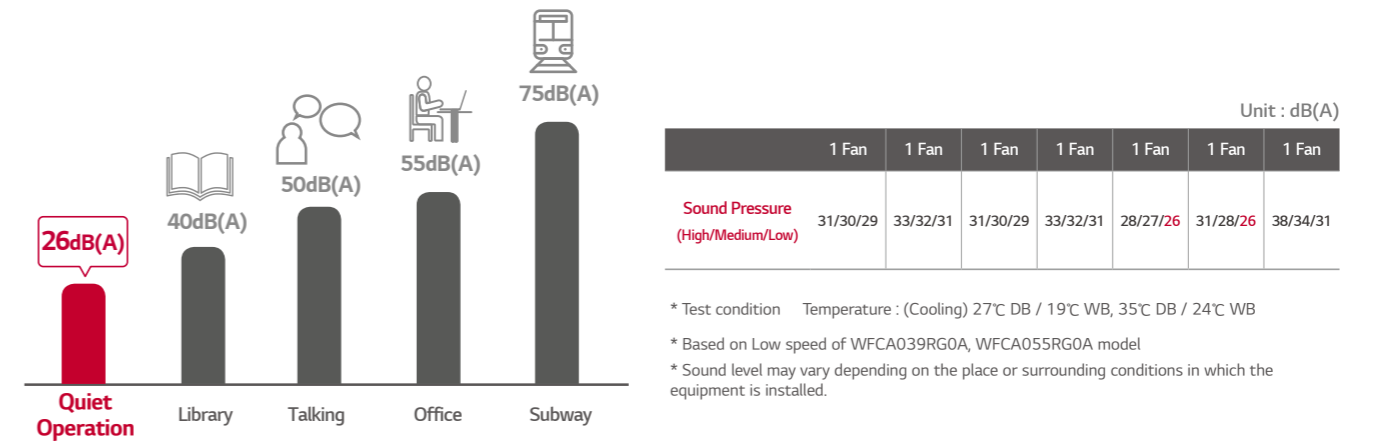
The detachable corner design makes it easy to adjust the hanger during installation and helps to easily check leakages in the drain connection pipe. Moreover, button type holder design makes it is easy to install the panel to the body.



## | LOW ESP DUCT |

### Quiet Operation

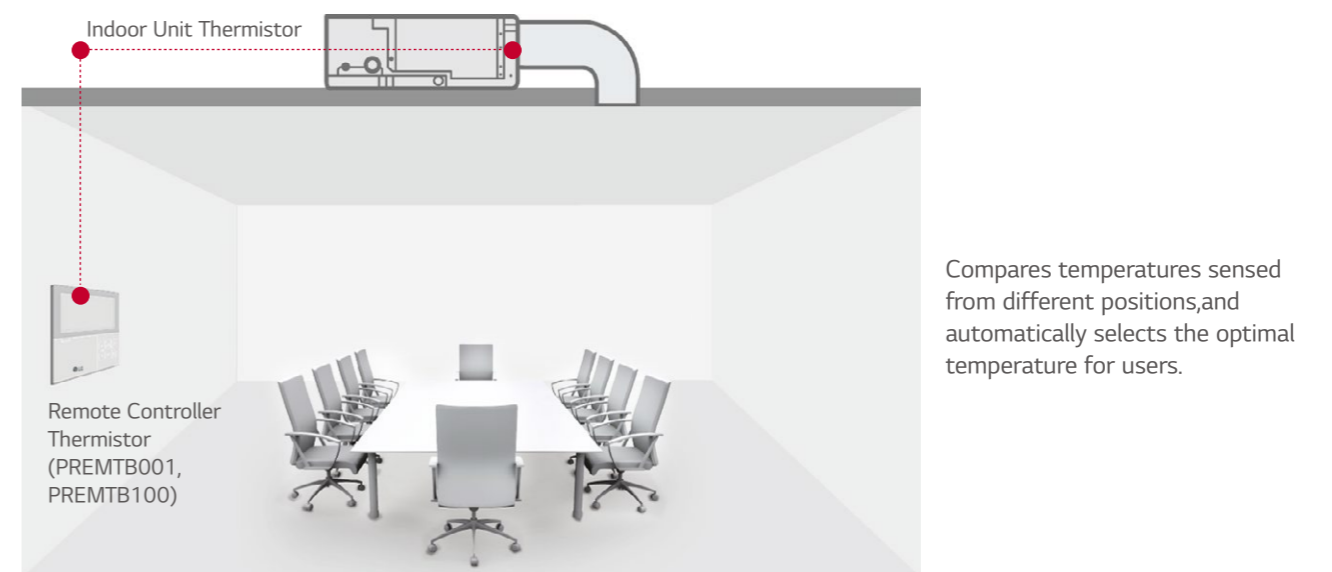
The noise level of Low EPS Ducts does not interfere with conversation at all.



## | LOW ESP DUCT |

### Two Thermistors Control

The indoor temperature can be checked using the thermistors in the remote controller as well as from the indoor unit. Two thermistors can check the optimal indoor air temperature for a more comfortable environment.





KEY FEATURES FOR APPLIED

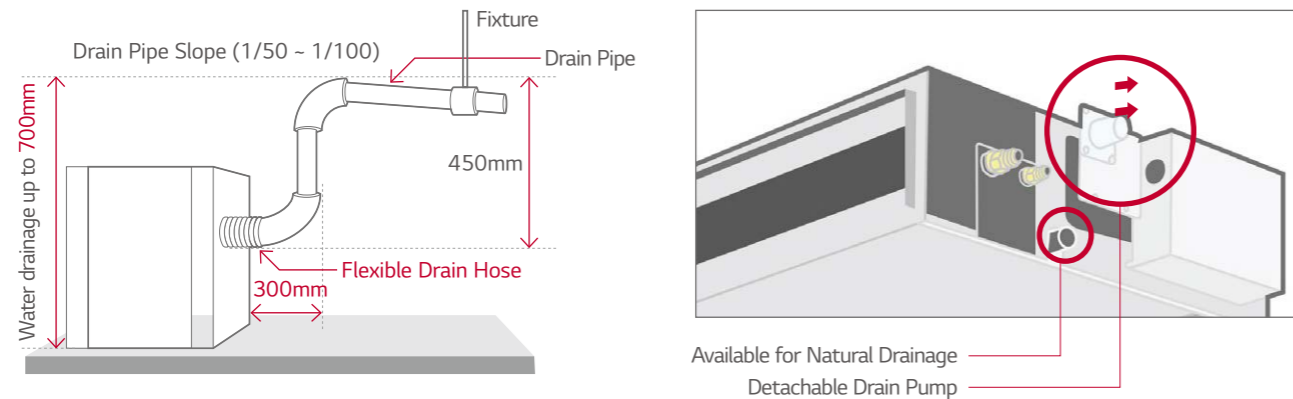
# FCU (FAN COIL UNIT)



## | LOW ESP DUCT |

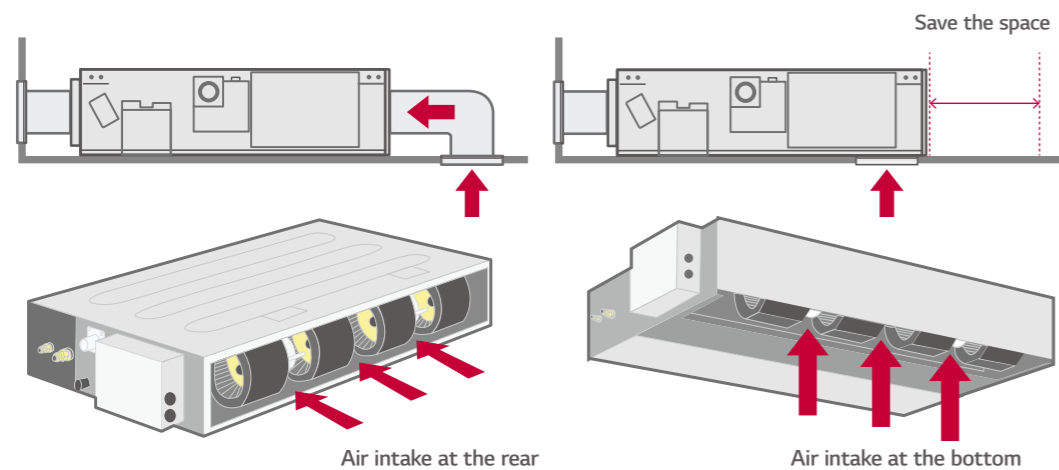
### High Head Drain Pump

High head drain pump automatically drains water up to a height of 700mm of drain-head height.



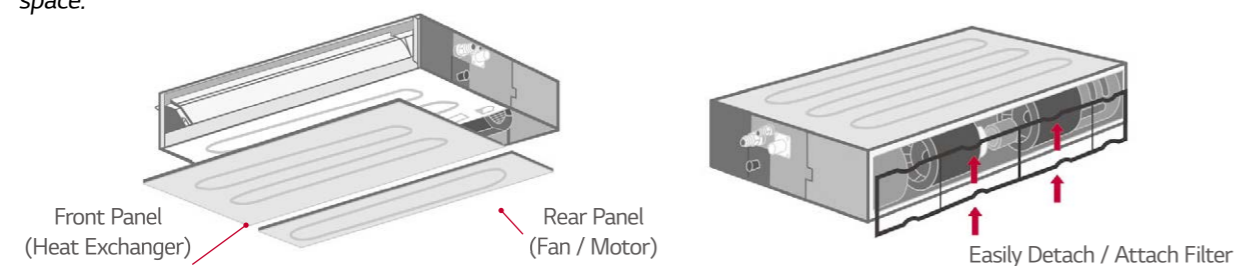
### Flexible Installation

LG's Low ESP Duct FCU allows air intake from the rear or the bottom sides according to requirements.



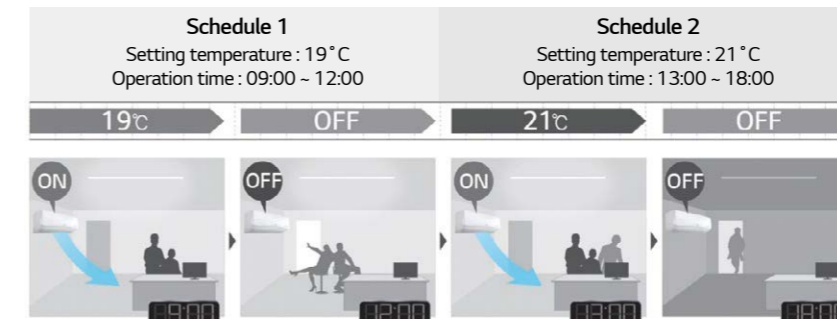
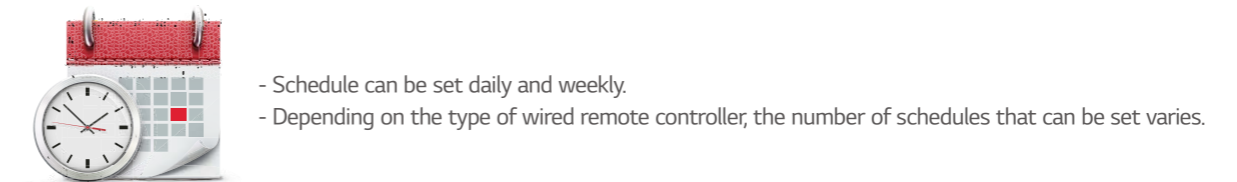
### Easy Service & Maintenance

Service engineers don't need to open the whole panel for maintenance, since the panel is divided into 2 components; one for heat exchanger and the other for fans/motor. User can easily detach and re-attach the air filter in the available limited space.

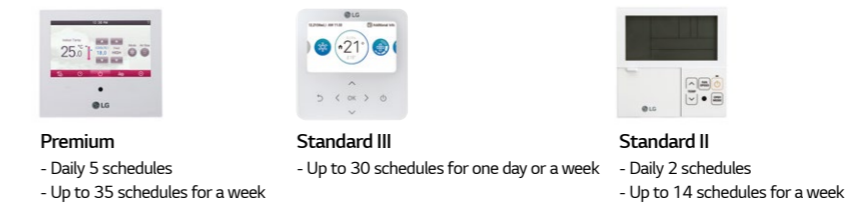


## | CONVENIENT FUNCTIONS |

You can set 2 schedules for one day, and up to 14 schedules for a week.



\*This function is for wired remote controller only. \*Wired remote controller need to be purchased separately.

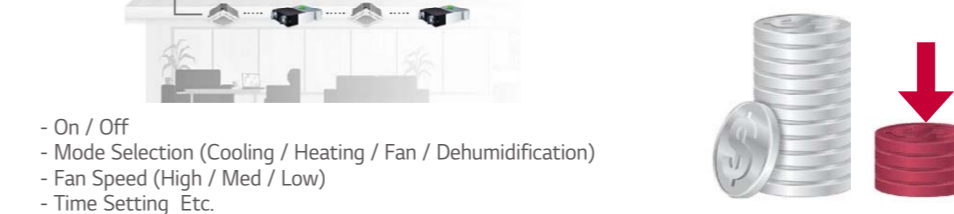


### Group control with One Remote Controller

Up to 16 FCUs can be controlled with one wired remote controller. It can be reducing factor for installation costs and keeping wall interiors clean.



### Controller & installation cost saving



- On / Off
- Mode Selection (Cooling / Heating / Fan / Dehumidification)
- Fan Speed (High / Med / Low)
- Time Setting Etc.

※ If you set up to 'Installation Setting' > Group Control 'Enabled' in your Wired Remote Controller, you can use many more functions.

# KEY FEATURES FOR APPLIED FCU (FAN COIL UNIT)



## | CONVENIENT FUNCTIONS |

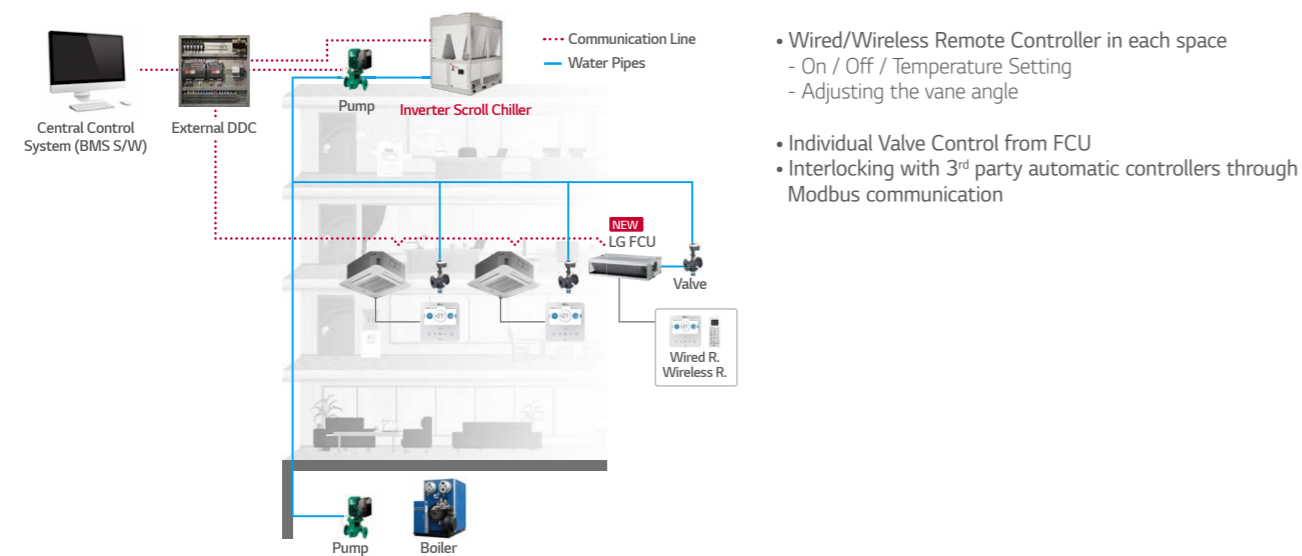
### Easy Control (Simple Test Run via LGMV)

LG MV (Monitoring View) helps engineers to inspect and monitor LG's air conditioning unit easily.



### Individual Control & External Central Control

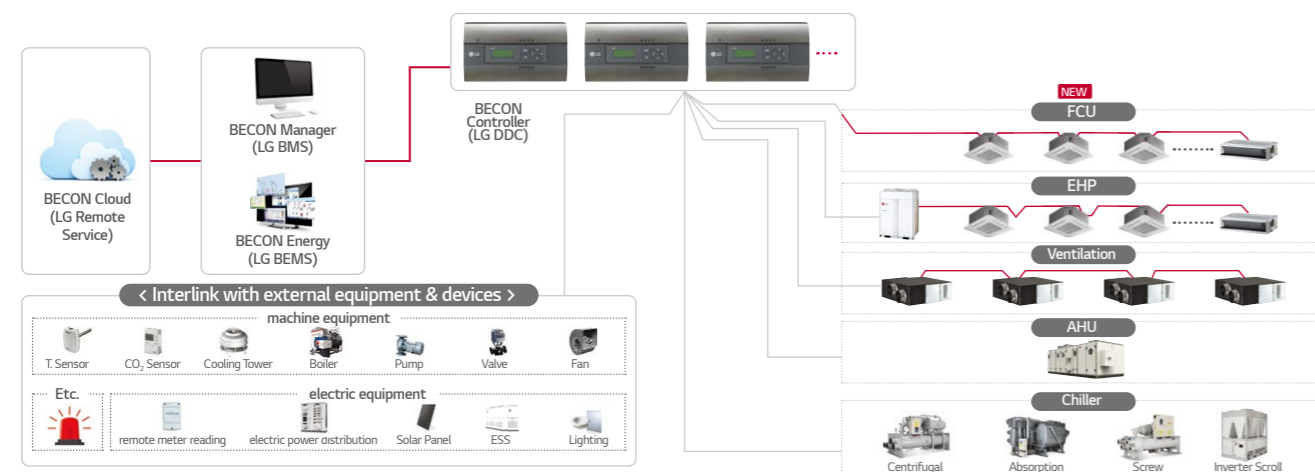
It allows not only to control each room by using the remote controller, but also apply integrated control through a 3<sup>rd</sup> party central controller.



## | CONVENIENT FUNCTIONS |

### BECON Building Solution (LG Building Management System)

LG's Automatic Control (BECON) enables the overall facility control and energy management of buildings, including machinery and electrical equipment, as well as control of LG's equipment. BECON also enables remote services based on cloud.



# KEY FEATURES FOR ESS LG ESS SOLUTION



## | COMMERCIAL & INDUSTRY APPLICATION |

### ESS Installation Type

Depending on the customer's installed environment, ESS is organized into indoor and outdoor types.

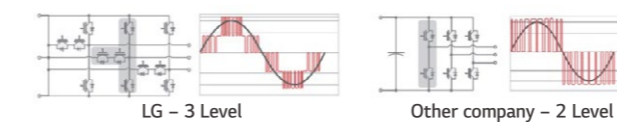
Type	Contents	Installation picture
Indoor type ESS	<ul style="list-style-type: none"> <li>Installation in a newly-built building or an existing building.</li> </ul>	
Outdoor type ESS	<ul style="list-style-type: none"> <li>Installation in outdoor container(40ft).</li> </ul>	

### PCS (Power Conditioning System)

LG Electronics is able to provide high efficiency and reliable PCS to customers and meet the requirements of customers.

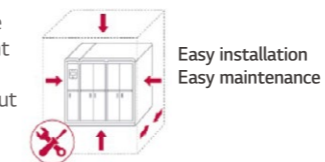
#### High efficiency circuit design

Applying 3-level topology, LG Electronics supports high efficiency and high quality power.



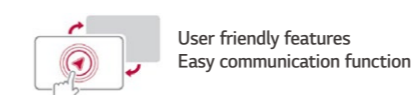
#### Compact size - Efficient space utilization

Compared to other companies, the compact size reduces the footprint and makes installation space more efficient. The power density is about 12% higher than other companies.



#### User friendly HMI<sup>1)</sup>

LG Electronics supports the user-friendly HMI with LCD touch screen and UI



1) Human and Machine Interface

# KEY FEATURES FOR ESS

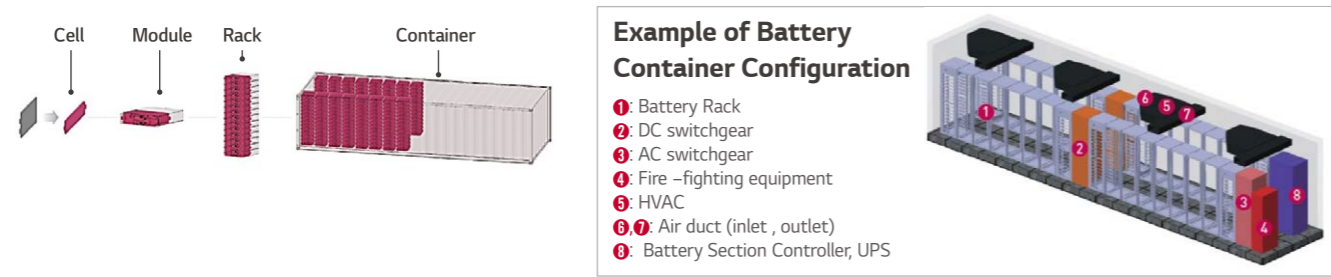
## LG ESS SOLUTION



### | COMMERCIAL & INDUSTRY APPLICATION |

#### Li-ion Battery

We provide most optimal energy solution for the user using our state-of-the-art energy storage system with a long lifespan and a top-notch quality.



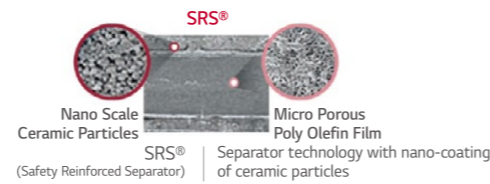
#### Compactness & Long Lifespan

LG's L&S (Lamination & Stacking) process minimizes dead space, Enables higher energy density, and enhances the sustainability of cell structures.



#### Safety

LG's SRS®(Safety Reinforced Separator) increases the mechanical And thermal stability of battery cells.



#### System Optimization

The high energy density and optimal dimensions of our new generation of Energy Cell (JH3) have allowed us to radically improve the efficiency of pack design.

#### PMS (Power Management System)

High reliability is ensured by using Becon S/W which is designed by LG Electronics.



#### Monitoring and Analyzing

- Store bulk data at various points
- Broad compatibility with third party device

#### Easy to Use

- Provide solutions that meet customer needs
- Convenient user-oriented GUI

#### Optimized Algorithm

- Peak-shifting, Peak-cut, Frequency regulation, etc.
- Maximize revenue by optimized algorithm

#### Three-Phase Home ESS Solution

Premium three-phase ESS solution for European residential market



[Example of Installation]

#### PV inverter & ESS PCS in one body

- Highly efficient, compact size
- Easy installation

#### Compact design

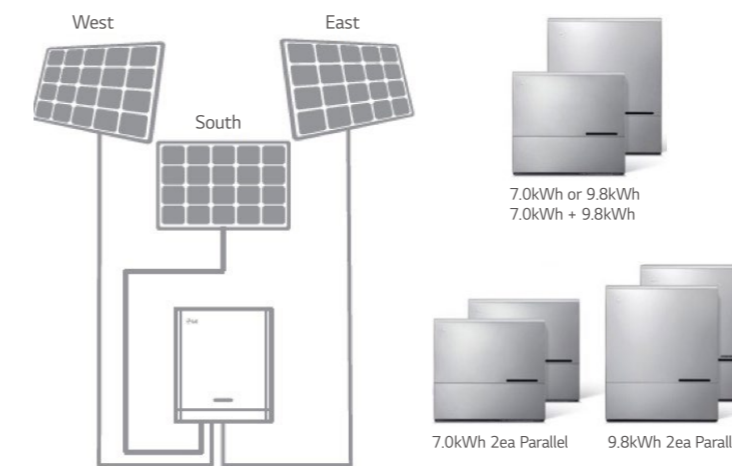
- PCS volume (35.6%↓) and weight (26.5%↓) reduction

#### Scalable capacity

- 6.4kWh → 12.8kWh

#### Three-Phase Home ESS Solution

Premium three-phase ESS solution for European residential market



[Three-MPPT]

[Battery combinations]

#### High power and back-up function

- More solar and more power
- Emergency power supply

#### Battery capacity flexibility

- Using two-battery channel and battery pack Battery capacities are from 7kWh to 19.6kWh)

# LG ESS SOLUTION



## | COMMERCIAL & INDUSTRY APPLICATION |

### Single-Phase LG ESS Home Solution

DC & AC coupled ESS solution for US residential market



[Example of Installation]

#### 3 individual MPPT strings for PV arrays

- Design Flexibility , higher levels of harvested energy

#### AC-Coupled ESS

- For new & retrofit solar systems

#### Emergency power supply function

- Energy Independence by supplying enough backup time (Almost 4hrs with 5kW load)

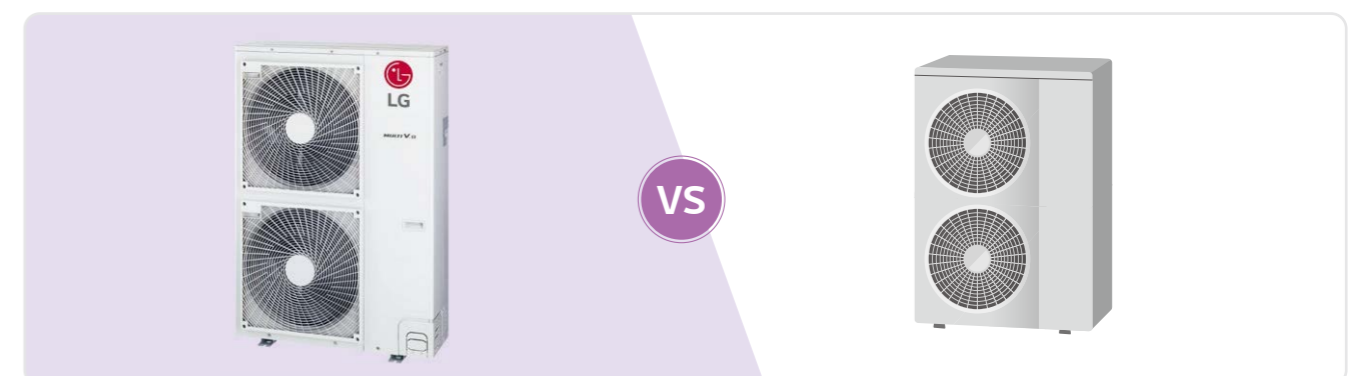
# MULTI V™ S



## PRODUCT COMPARISON | AIR COOLED VRF SIDE DISCHARGE

### MULTI V S

### A COMPANY





## Key Specifications

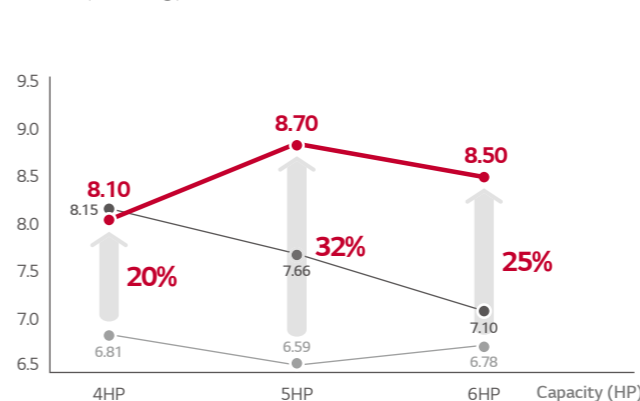
Multi V S has superiority compared to competitor.

Comparison Items	MULTI V S		D Company	
	1ø	3ø	1ø	3ø
EER (4/5/6HP)	3.53 / 4.20 / 3.90		3.20 / 2.70 / 2.70	3.10 / 2.60 / 2.60
COP (Rated) (4/5/6HP)	5.26 / 5.15 / 4.80		4.29 / 4.07 / 3.71	4.52 / 4.28 / 3.90
SEER (4/5/6HP)	8.10 / 8.70 / 8.50		8.15 / 7.66 / 7.10	6.81 / 6.59 / 6.78
SCOP (4/5/6HP)	4.70 / 4.80 / 5.00		4.63 / 4.70 / 4.70	3.94 / 4.19 / 4.43
Longest Pipe Length (4/5/6HP)	80m		70m	120m
Total Pipe Length	300m		300 m	
Difference in height Indoor ↔ Outdoor (Outdoor ↔ Indoor)	30m (15m)		30m (15m)	50m (15m)
Compressor	Scroll		Swing Rotary	
Volume	0.26m <sup>2</sup>		0.36m <sup>2</sup>	0.39m <sup>2</sup>
Weight (4/5/6HP)	65 / 72 / 72 kg		89kg	104kg
Sound Pressure Level (4/5/6HP) (Cooling / Heating)	50 / 51 / 52 dB(A) 52 / 53 / 54 dB(A)		51 / 52 / 53 dB(A) -	50 / 51 / 51 dB(A) -
Sound Power Level (4/5/6HP) (Cooling / Heating)	67 / 70 / 71 dB(A) 71 / 74 / 75 dB(A)		68 / 69 / 70 dB(A) 69 / 70 / 71 dB(A)	68 / 69 / 70 dB(A) -
Operation Range (Cooling / Heating)	-5 ~ 48°C DB -20 ~ 18°C WB		-5 ~ 46°C DB -20 ~ 15.5°C WB	

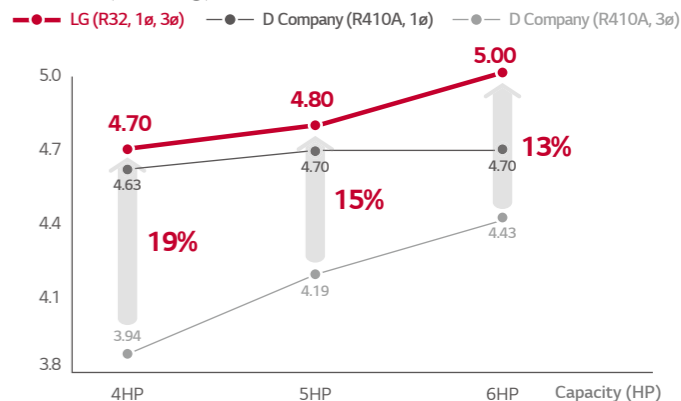
## SEER / SCOP

Seasonal Efficiency of LG product is\* higher than D Company. And all models' class is more than A++.

### SEER (Cooling)



### SCOP (Heating)



### SEER / SCOP Class (ERP Regulation)

• Multi V S class

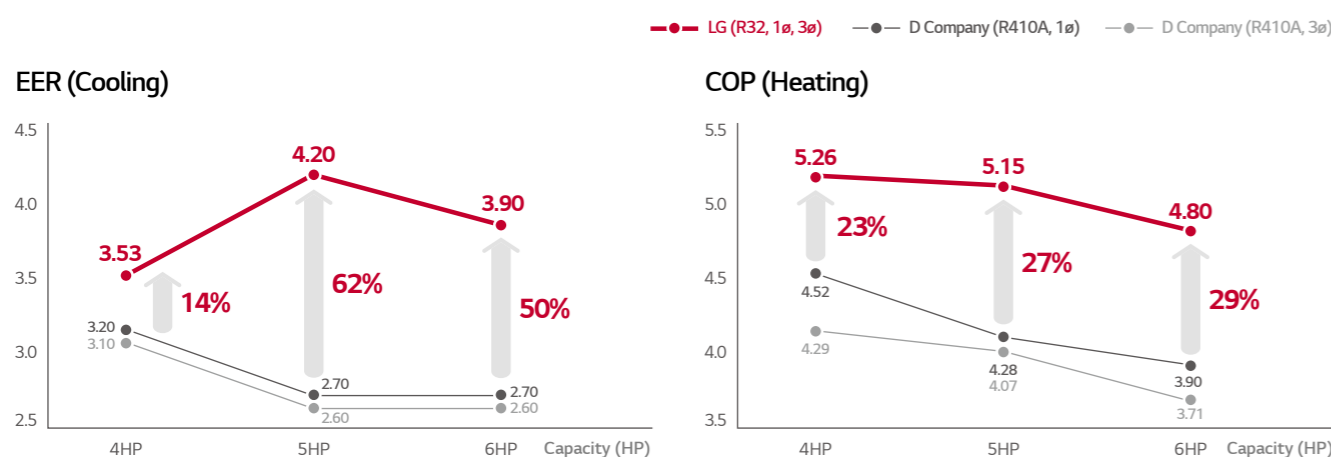
HP	4	5	6
SEER	8.1 A++	8.7 A+++	8.5 A+++
SCOP	4.7 A++	4.8 A++	5.0 A++

• Energy Labeling (Europe Only)

HP	SEER	SCOP
A+++	SEER ≥ 8.5	SCOP ≥ 5.1
A++	6.1 ≤ SEER < 8.5	4.6 ≤ SCOP < 5.1
A+	5.6 ≤ SEER < 6.1	4.0 ≤ SCOP < 4.6
A	5.1 ≤ SEER < 5.6	3.4 ≤ SCOP < 4.0
B	4.6 ≤ SEER < 5.1	3.1 ≤ SCOP < 3.4
C	4.1 ≤ SEER < 4.6	2.8 ≤ SCOP < 3.1
D	3.6 ≤ SEER < 4.1	2.5 ≤ SCOP < 2.8

## EER / COP

LG Multi V S achieved high efficiency through technology of R32 Refrigerant and revolutionary scroll compressor while minimizing the size of outdoor unit.



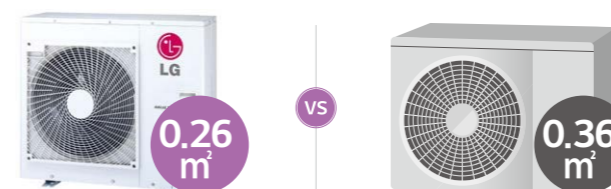
□ Type of outdoor unit :  
 - LG(1ø, 3ø) : 1 Fan  
 - D Company(1ø) : 1 Fan  
 - D Company(3ø) : 2 Fan

## Size

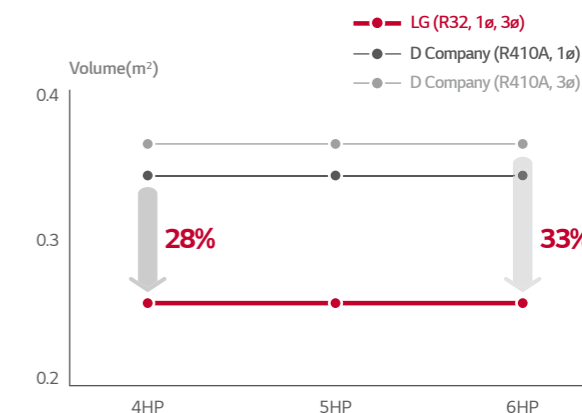
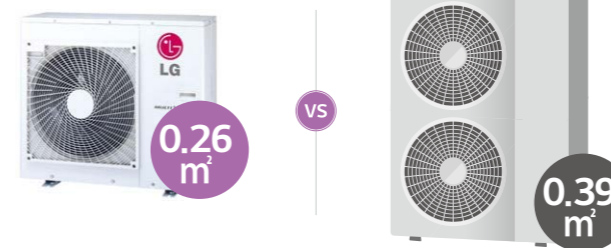
Multi V S volume is 28%(1ø), 33%(3ø) smaller than D Company.

\* Source : <https://www.eurovent-certification.com/>

### In Case of 1 Phase Model



### In Case of 3 Phase Model



Volume Comparison	HP	4	5	6
	MULTI V S	0.26	0.26	0.26
	D Company(1ø)	0.36	0.36	0.36
		0.39	0.39	0.39

COMPARISON WITH COMPETITORS

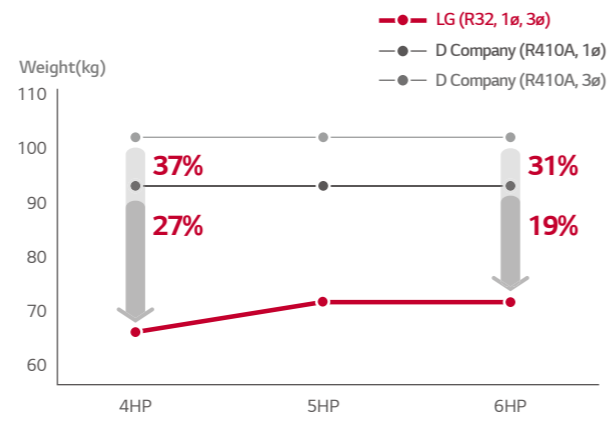
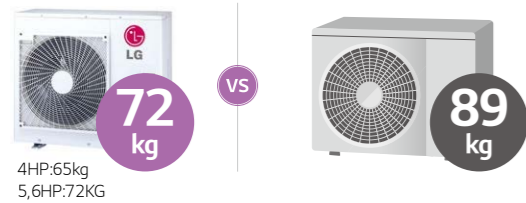
**MULTI V S**



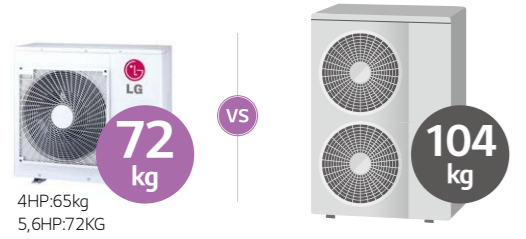
**Weight**

Multi V S weight is 27%(1ø), 37%(3ø) lighter than D Company(based on 4HP model).

**In Case of 1 Phase model**



**In Case of 3 Phase model**



Weight Comparison	HP	Unit : kg		
		4	5	6
Multi V S		65	72	72
D Company(1ø)		89	89	89
D Company(3ø)		104	104	104

**Refrigerant Amount**

Multi V S reduced refrigerant charge by applying environment-friendly refrigerant R32.

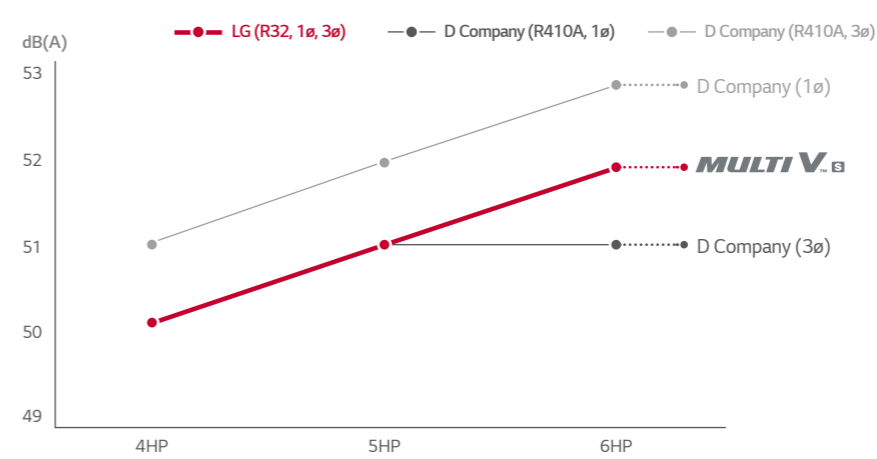
Amount of Refrigerant [kg]	HP	Company		Factory Charge	Field Additional Charge	Total	t-CO2 eq.	IDU	
		Type	Refrigerant						
	4	Multi V S	R32	1.5	2.19	3.69 (28%↓)	2.5 (77%↓)	IDU : 7 kBtu/h * 5EA	
		D Company(1ø)	R410A	3.7	1.45	5.15	10.8		
		D Company(3ø)	R410A	3.6	1.45	5.05	10.5		
	5	Multi V S	R32	2.0	2.54	4.54 (12%↓)	3.1 (71%↓)		IDU : 9 kBtu/h * 5EA
		D Company(1ø)	R410A	3.7	1.45	5.15	10.8		
		D Company(3ø)	R410A	3.6	1.45	5.05	10.5		
6	Multi V S	R32	2.0	2.54	4.54 (12%↓)	3.1 (71%↓)	IDU : 12 kBtu/h * 5EA		
	D Company(1ø)	R410A	3.7	1.45	5.15	10.8			
	D Company(3ø)	R410A	3.6	1.45	5.05	10.5			

※ Calculated at Main Pipe Length: 5m, Each Branch: 3m  
 ※ Please refer to PDB for details.  
 ※ This result can be different depending on actual environment

**Outdoor Unit Noise Level**

Noise Level of Multi V S is reduced by 1 dB(A) compared to D Company(based on 1 phase model).

**Sound Pressure Level (Cooling)**



Unit : dB(A), Source : Data Book

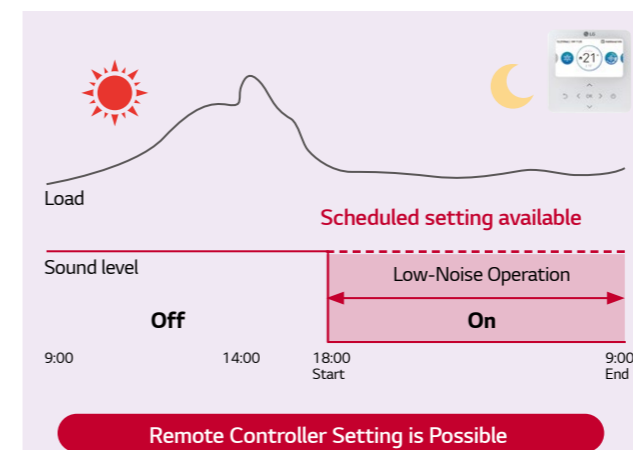
HP	4	5	6
Multi V S	50.0	51.0	52.0
D Company(1ø)	51.0	52.0	53.0
D Company(3ø)	50.0	51.0	51.0

**Low Noise Operation**

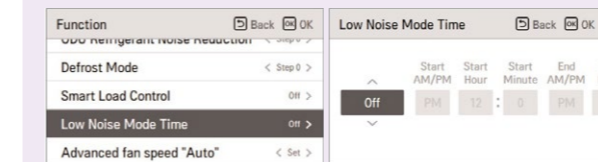
Multi V S Low-Noise Operation is possible regardless of the time where noise sensitive areas. This function can be set by users through remote controller.

**Multi V S**

Standard III Wired remote controller setting possible

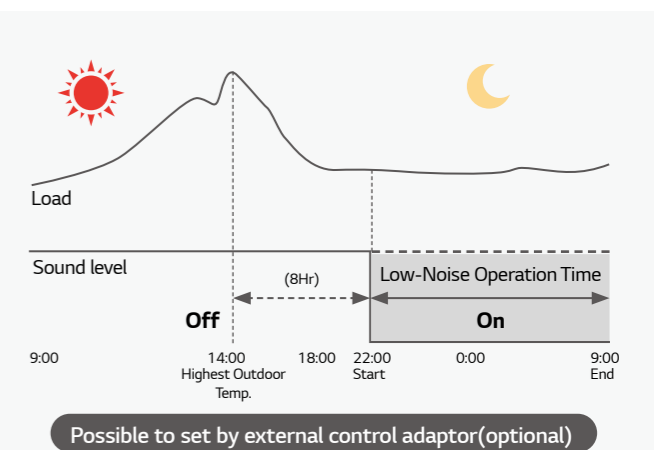


※ Low-Noise Operation requires Standard III Wired Remote Controller.



**D Company**

Outdoor Unit setting only





### Dual Sensing

Multi V S has temperature sensor and humidity sensor for higher efficiency under the low humidity condition while D company uses only temperature sensor.

#### Multi V S

Dual Sensing : Temperature(DB) + Humidity(WB)

#### D Company

Single Sensing : Temperature(DB) only

C Temperature sensor  
H Humidity sensor

- High humidity condition : Focus on the indoor comfort
- Low humidity condition : Focus on saving energy

Dual Sensing Control

- Smart Load Control
- Comfort Cooling
- Heating

- High humidity condition : - (only standard mode)
- Low humidity condition : - (only standard mode)



### PRODUCT COMPARISON | AIR COOLED VRF

#### MULTI V 5

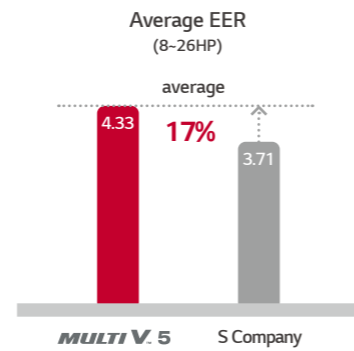
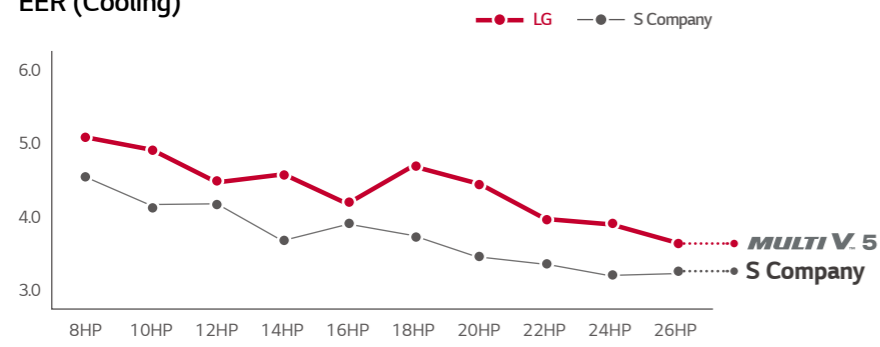
#### A COMPANY



### EER Comparison

MULTI V 5 EER (8-26HP) is higher than S Company. (8-26HP average EER is 17% higher than S Company)

#### EER (Cooling)



#### EER Comparison - EUROVENT

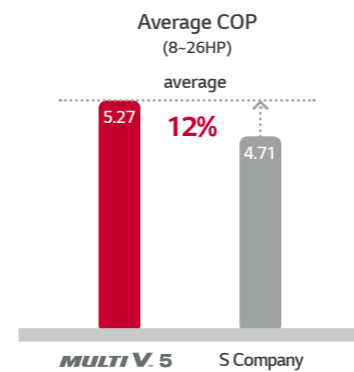
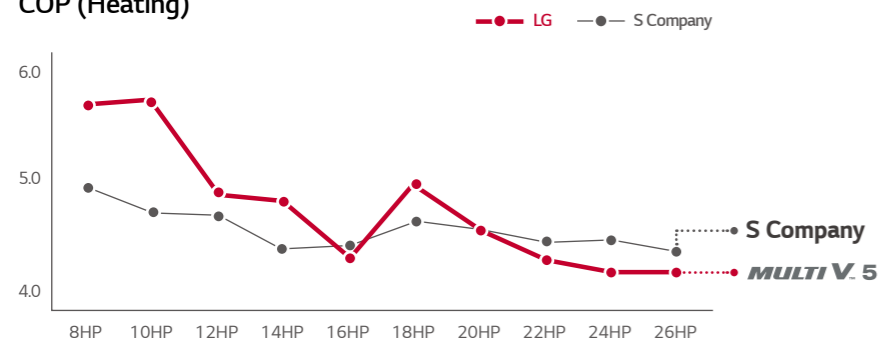
HP	8	10	12	14	16	18	20	22	24	26	avg.
MULTI V 5	4.99	4.83	4.43	4.52	4.11	4.62	4.39	3.92	3.86	3.60	4.33
S Company	4.48	4.09	4.12	3.66	3.87	3.70	3.45	3.32	3.20	3.24	3.71

\* S Company : Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted  
\* MULTI V 5 : ARUMxxxLTE5, Ducted

### COP Comparison

MULTI V 5 average COP (8-26HP) is higher than S Company. (8-26HP average COP is 12% higher than S Company)

#### COP (Heating)



#### COP Comparison - EUROVENT

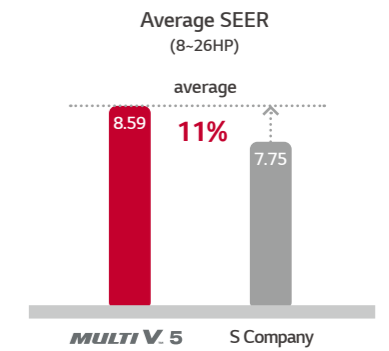
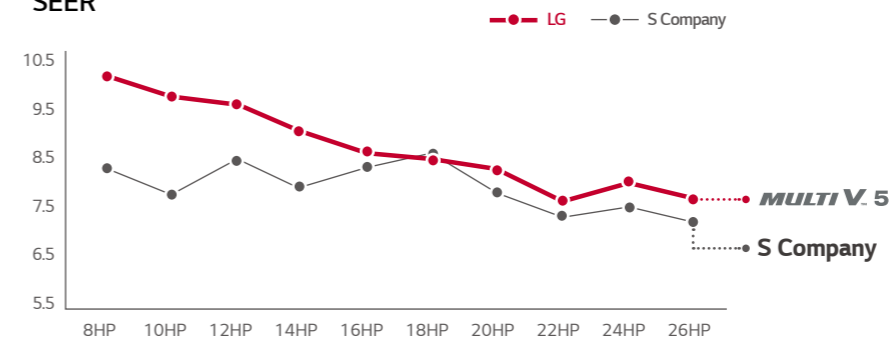
HP	8	10	12	14	16	18	20	22	24	26	avg.
MULTI V 5	5.64	5.69	4.91	4.82	4.36	4.98	4.59	4.35	4.23	4.23	5.27
S Company	4.94	4.74	4.71	4.43	4.46	4.68	4.60	4.50	4.51	4.41	4.71

\* S Company : Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted  
\* MULTI V 5 : ARUMxxxLTE5, Ducted

### SEER Comparison

MULTI V 5 SEER is mostly higher than S Company. (8-26HP average SEER is 11% higher than S Company)

#### SEER



#### SEER Comparison - EUROVENT

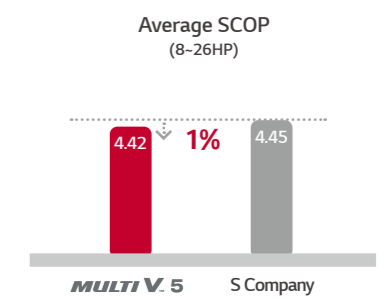
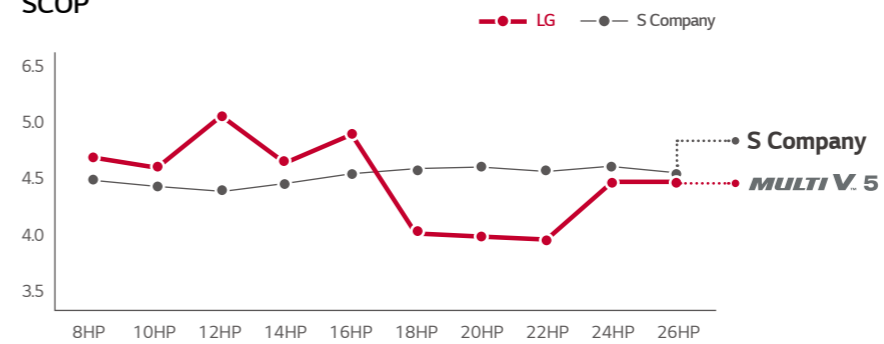
HP	8	10	12	14	16	18	20	22	24	26	avg.
MULTI V 5	10.10	9.70	9.59	8.89	8.38	8.23	8.05	7.51	7.88	7.55	8.59
S Company	8.15	7.70	8.23	7.97	8.20	8.29	7.50	7.10	7.30	7.10	7.75

\* S Company : Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted  
\* MULTI V 5 : ARUMxxxLTE5, Ducted

### SCOP Comparison

MULTI V 5 average SCOP is slightly lower than S Company. (8-26HP average SCOP is 1% lower than S Company)

#### SCOP



#### SCOP Comparison - EUROVENT

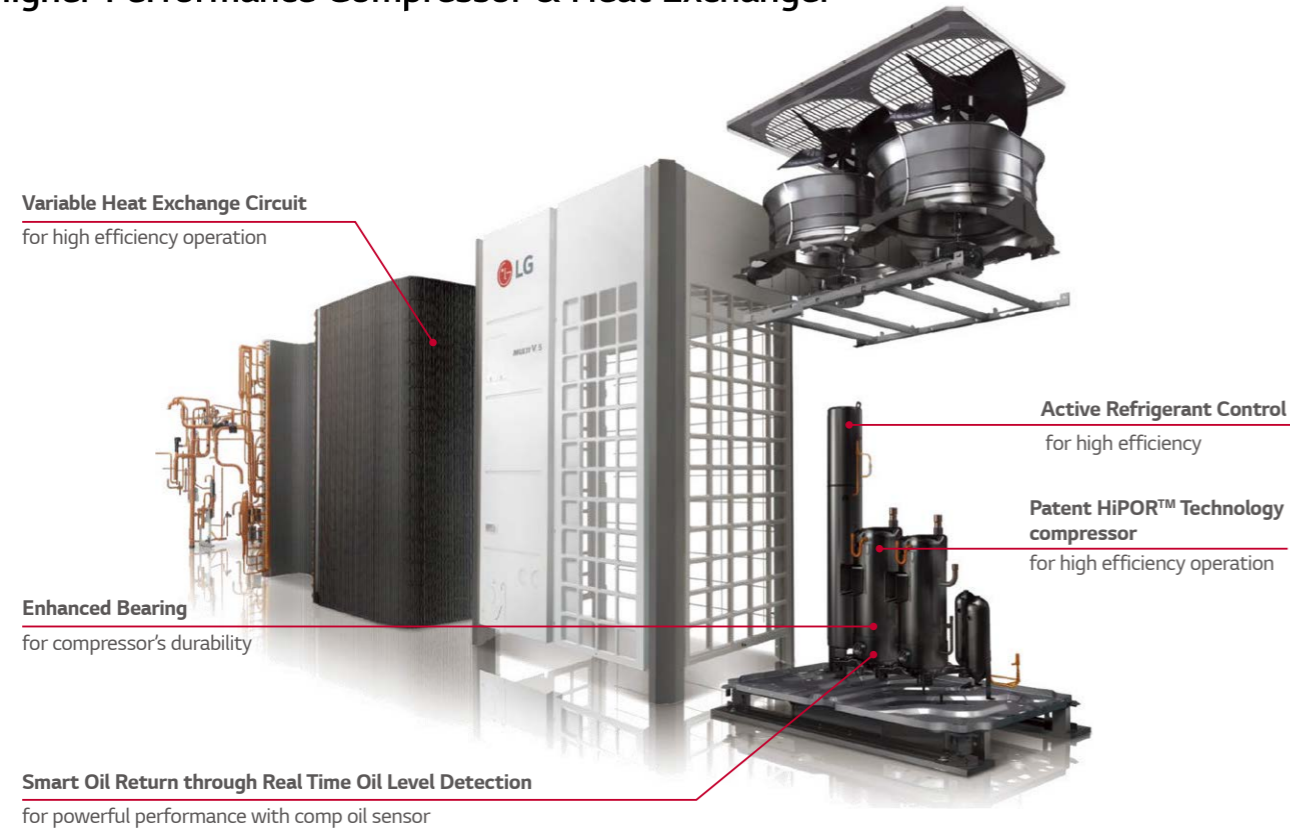
HP	8	10	12	14	16	18	20	22	24	26	avg.
MULTI V 5	4.69	4.51	5.01	4.63	4.83	4.00	3.98	3.90	4.34	4.34	4.42
S Company	4.45	4.34	4.31	4.40	4.51	4.54	4.56	4.46	4.50	4.40	4.45

\* S Company : Standard model, AMxxxJXVAGH, AMxxxKXVAGH, Ducted  
\* MULTI V 5 : ARUMxxxLTE5, Ducted





## Higher Performance Compressor & Heat Exchanger



## HiPOR™

With patent HiPOR™ technology, compressor can operate without energy loss which is occurred by oil return process.

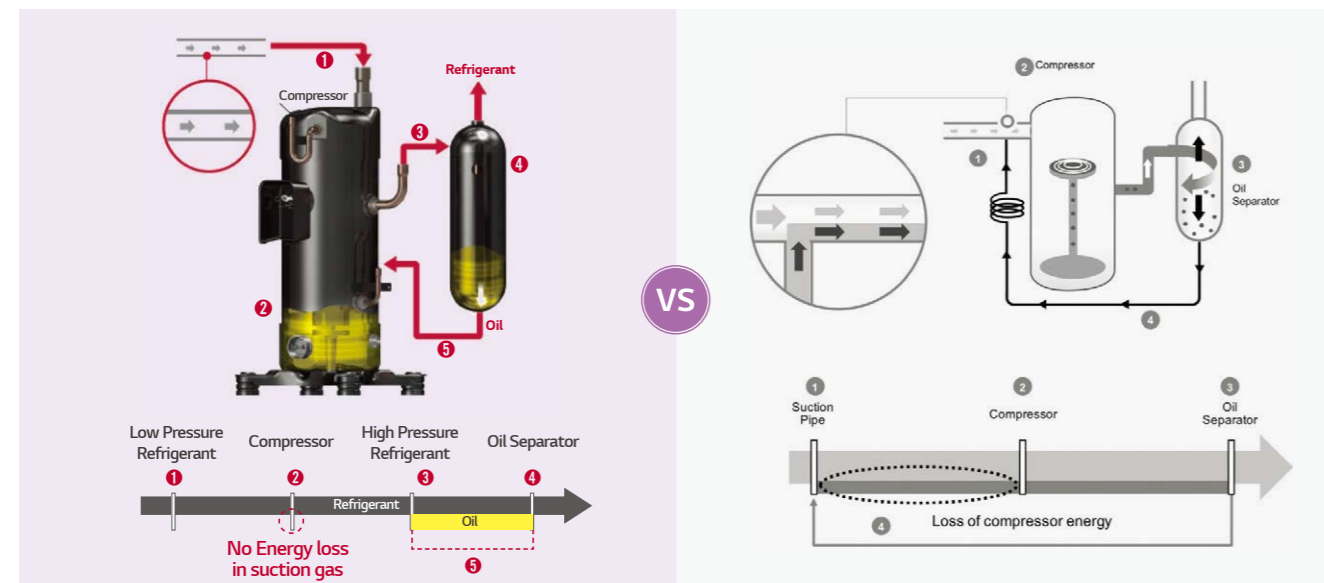
### Multi V 5

No loss in suction gas

※ HiPOR™: High Pressure Oil Return

### S Company

- Volume loss
- By-pass loss of high pressure refrigerant



## Smart Oil Return Through Real-Time Oil Level Detection

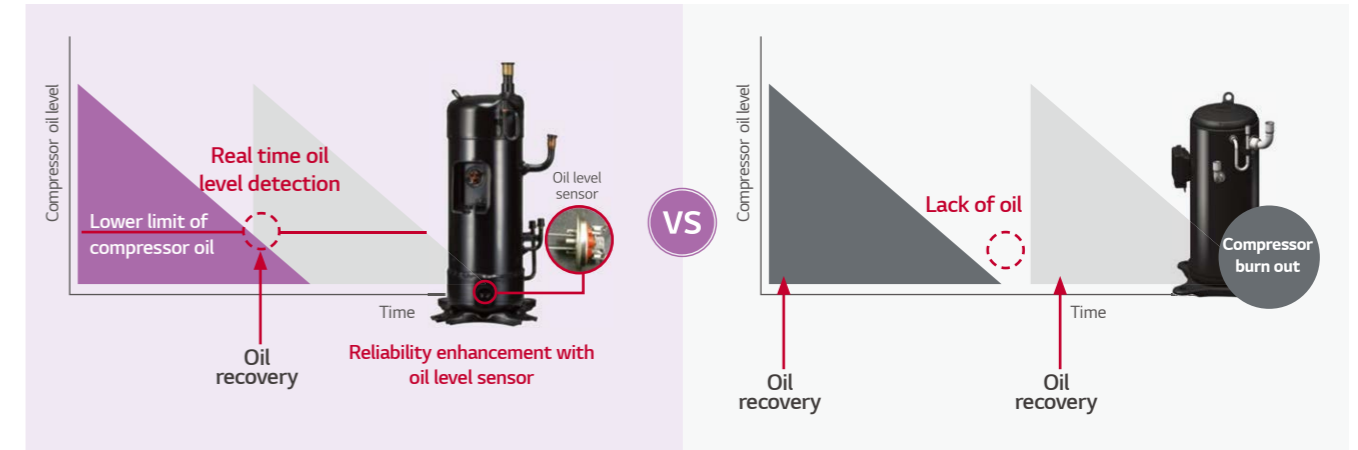
MULTI V 5 applied Smart Oil Return technology, the real-time oil level detection improved compressor reliability.

### Multi V 5

- Oil recovery operation carried out only during oil shortage
- Fundamentally prevent risk of compressor burnt out

### S Company

- No warning during lack of oil state
- Compressor burnt problem due to lack of oil status before oil recovery operation period



## Smart Oil Return Through Real-Time Oil Level Detection

VRF system is required oil recover for reliability. MULTI V 5 recover oil when oil level sensor detects low oil level.

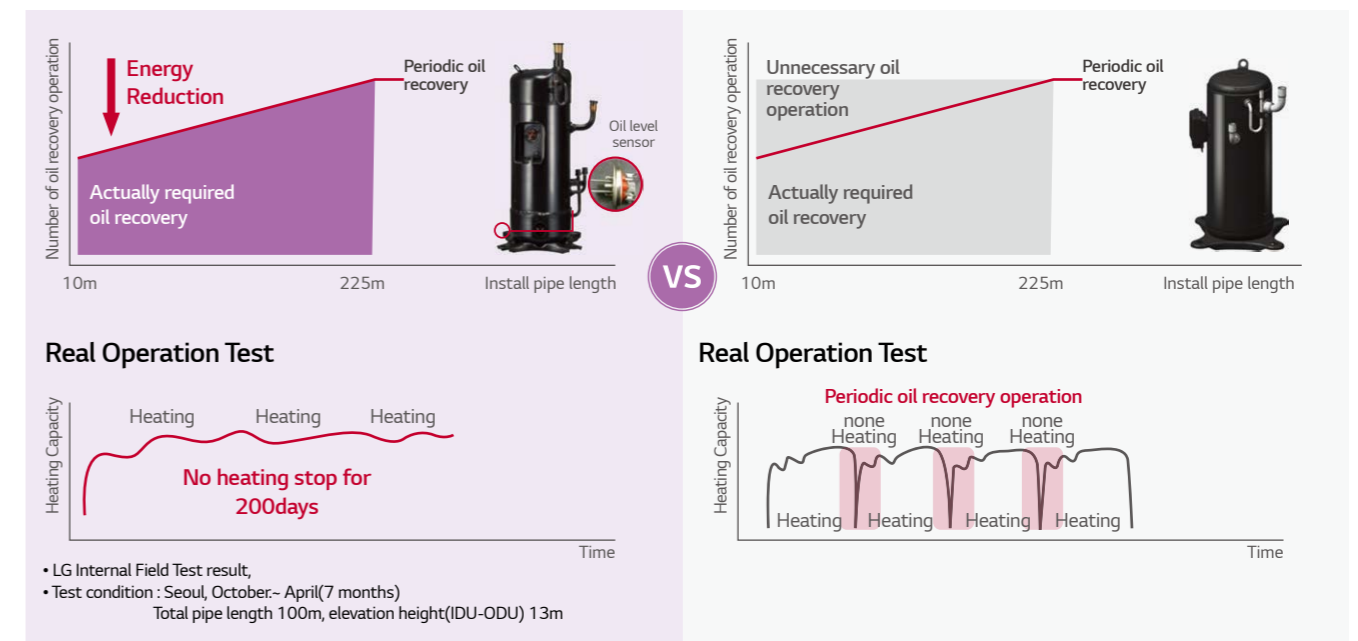
It can reduce energy consumption and minimize heating operation stop time.

### Multi V 5

- Apply oil level sensor - Reliability up
- Required oil recovery operation - Efficiency increase
- Oil distribution technology between compressors

### S Company

- Periodic oil recovery is performed to secure reliability
- Stop heating operation and energy consumption are reduced due to oil recovery operation



• LG Internal Field Test result,  
• Test condition : Seoul, October~ April(7 months)  
Total pipe length 100m, elevation height(IDU-ODU) 13m

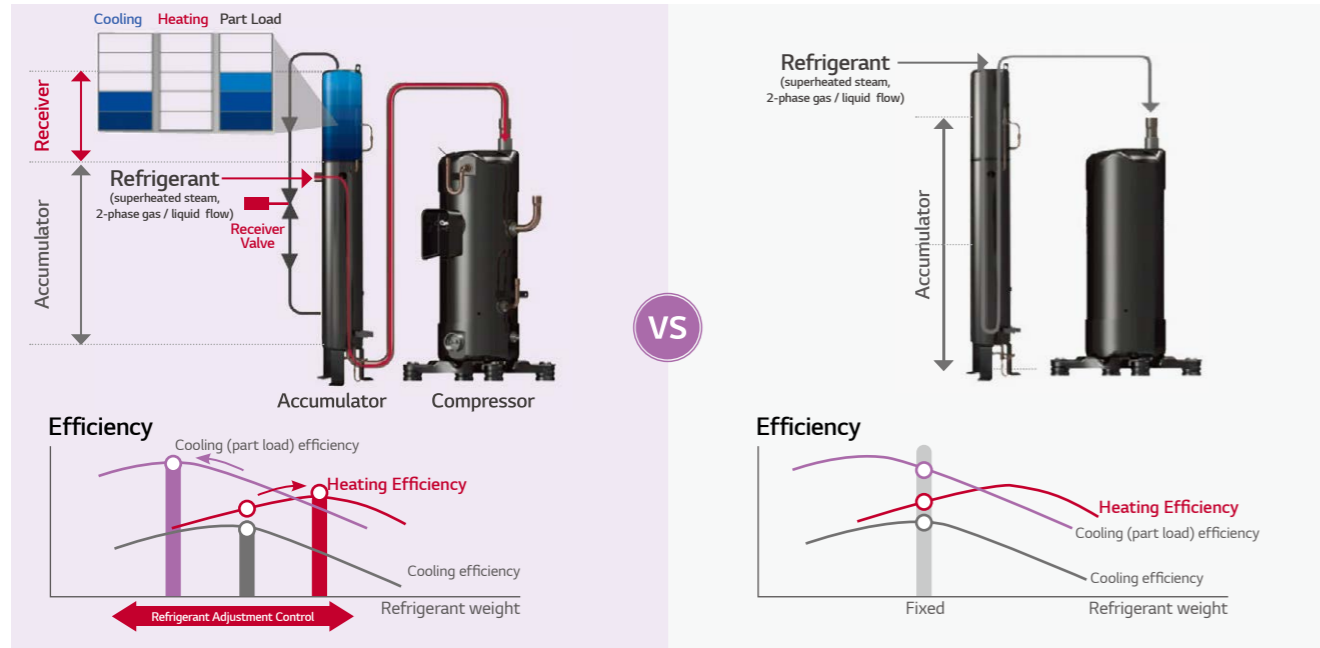


### Active Refrigerant Control

Real time optimal refrigerant control according to change in load maximizes system efficiency.

Multi V 5

S Company

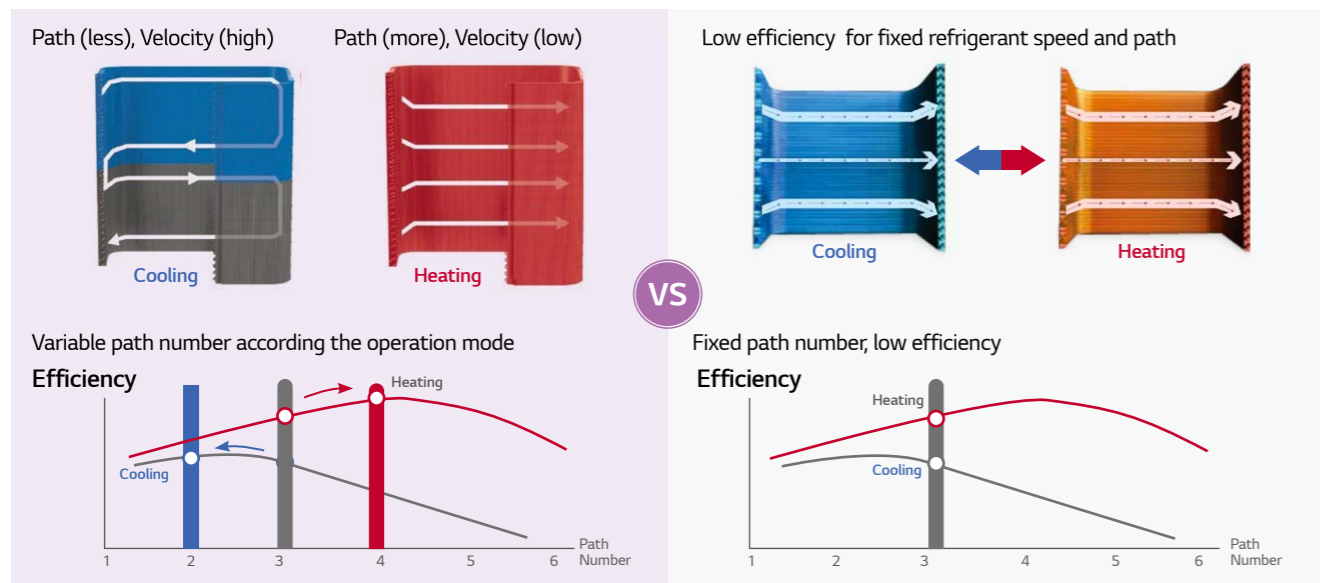


### Variable Heat Exchanger Circuit

The optimization of heat exchanger's path number has improved in heating and cooling efficiency.

Multi V 5

S Company



### Dual Sensing Control

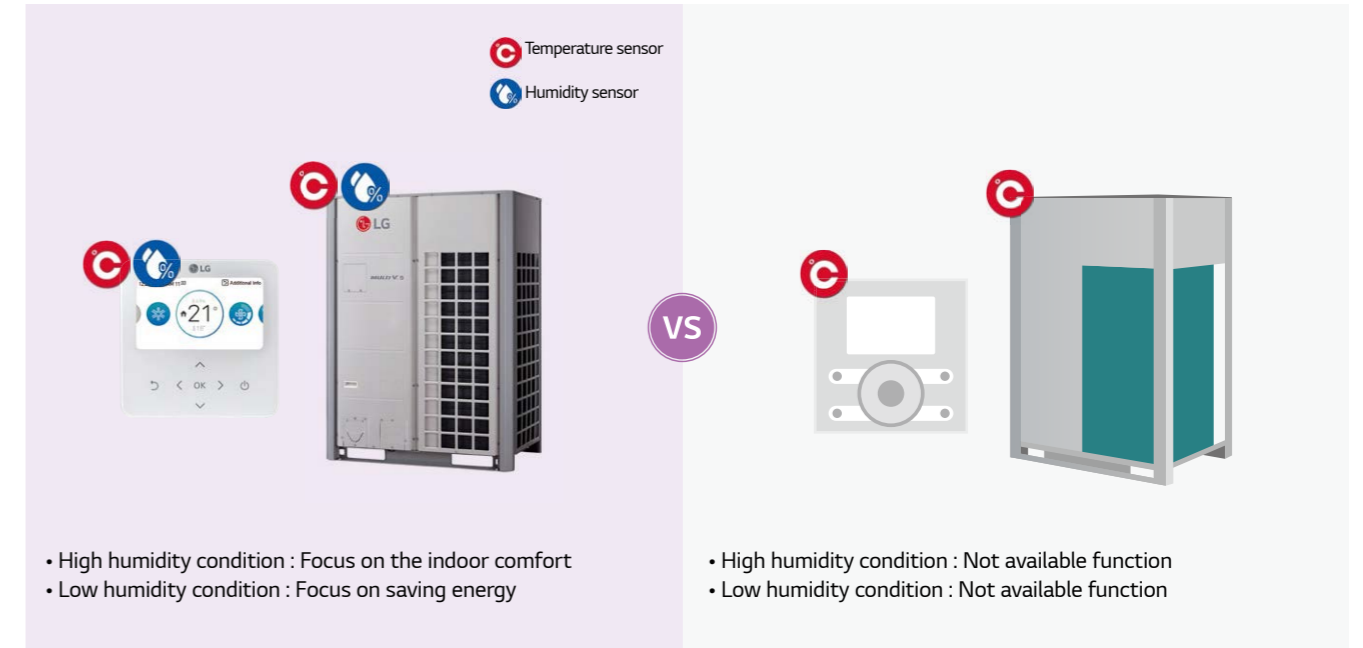
MULTI V 5 can save more energy with dual sensing (temp & humidity sensor) control under low humidity condition. Also, can make more comfortable indoor environment through dual sensing.

Multi V 5

Dual sensing : Temperature + Humidity

S Company

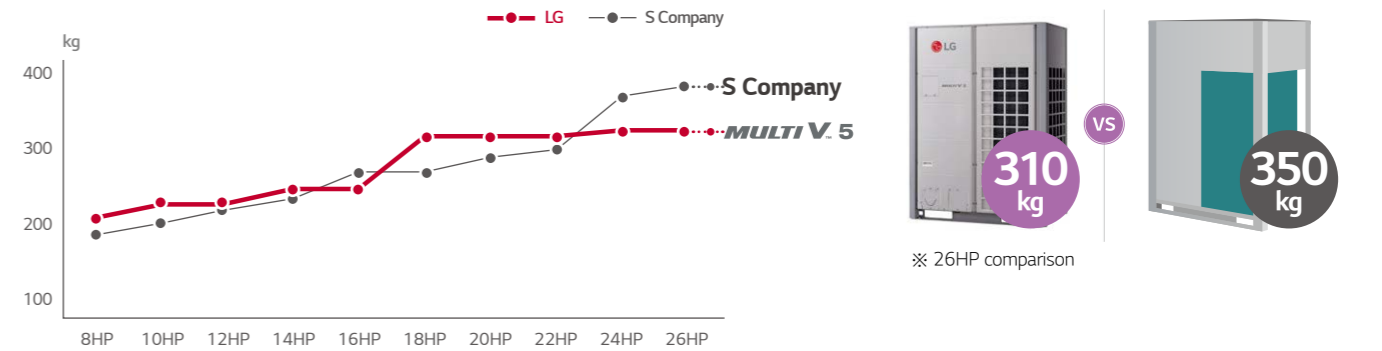
Single sensing : Temperature only



### Light Weight Outdoor Units

Multi V 5 overall maximum weight is less than 310kg.

#### Weight Comparison



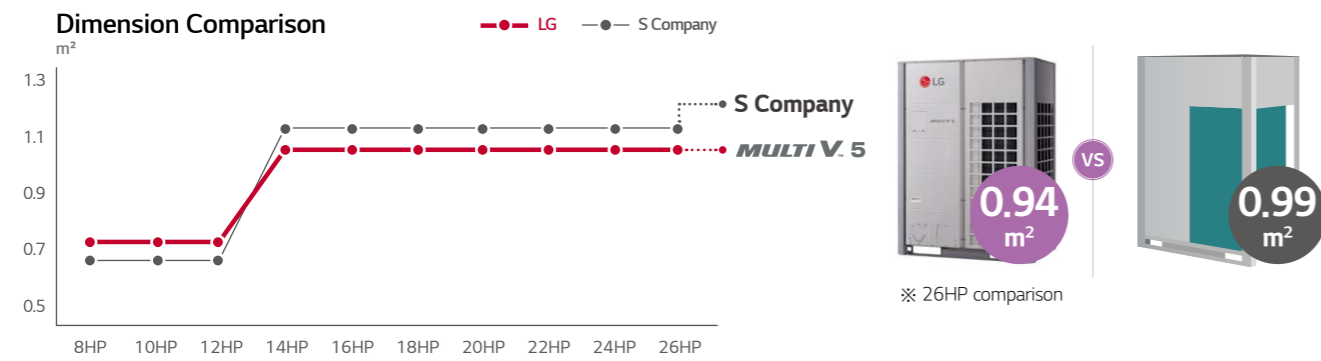
Weight Comparison	HP	Unit : kg									
		8	10	12	14	16	18	20	22	24	26
<b>MULTI V. 5</b>		198	215	215	237	237	300	300	300	310	310
S Company		186	197	210	226	253	255	282	290	342	350

\* Reference : MULTI V 5 heat pump 380V vs. S Company heat pump AMXXXJXVAGH



### Small Footprint Outdoor units

MULTI V 5 8HP~ 12HP installation area is 0.71m<sup>2</sup>, 14HP ~ 26HP installation area is 0.94 m<sup>2</sup>,

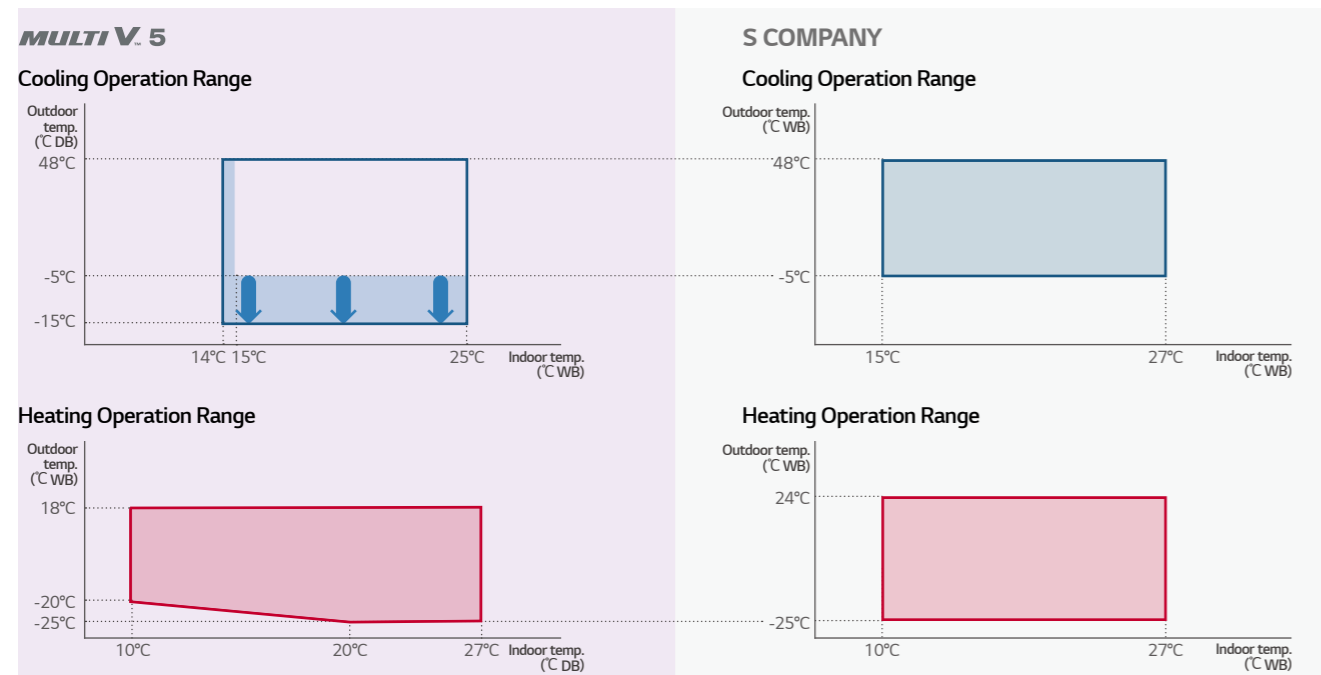


Footprint Comparison	HP	HP										
		8	10	12	14	16	18	20	22	24	26	
MULTI V. 5		0.71	0.71	0.71	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
S Company		0.67	0.67	0.67	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

\* Reference : MULTI V 5 heat pump 380V vs. S Company heat pump MMY-

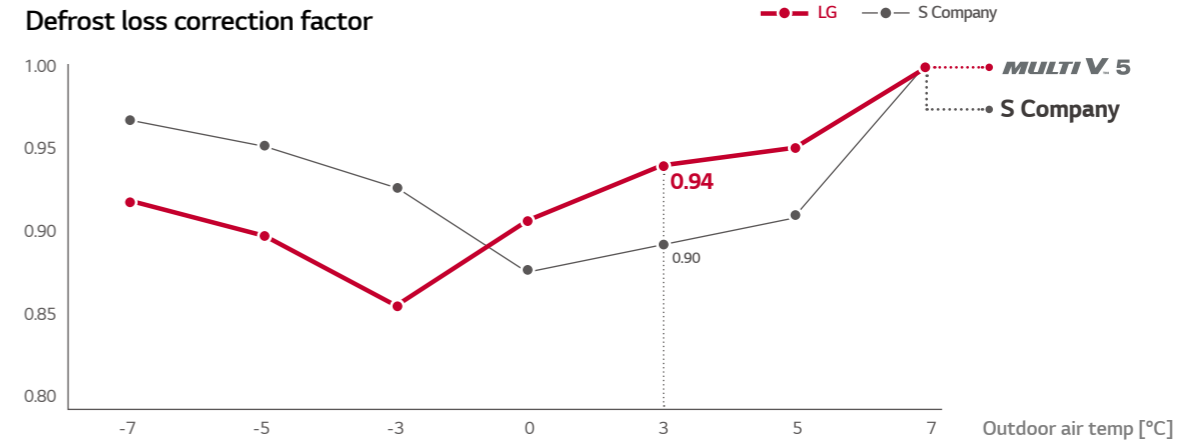
### Wide Operation Range

MULTI V 5 has Wide Operation Range with cooling -15°C~ 48°C and heating -25°C~ 18°C. whereas S Company has cooling -5°C~ 48°C and heating -25°C~ 24°C.



### Defrost Loss Correction Factor

Multi V 5 defrost loss correction factor is similar with S Company.



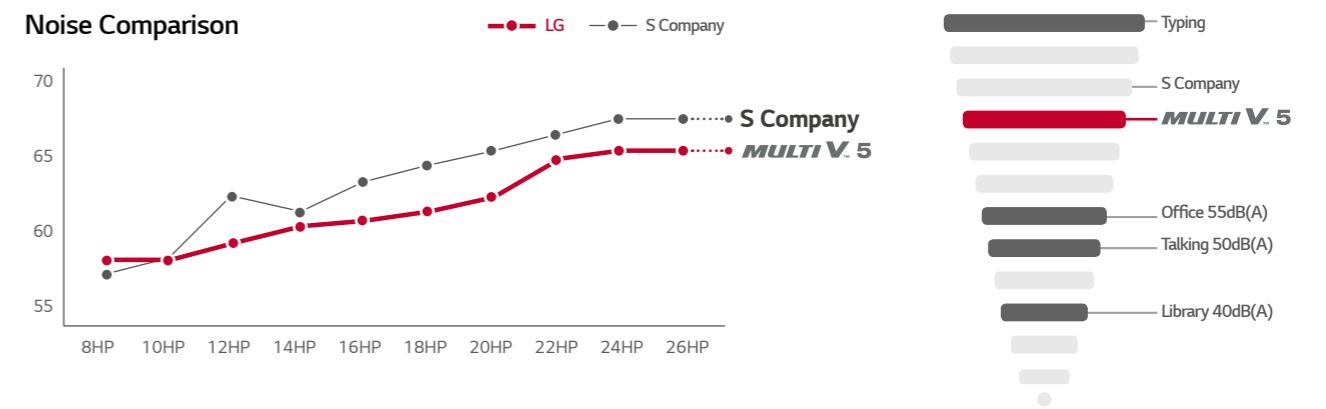
°C	-7	-5	-3	0	3	5	7	avg.
MULTI V. 5	0.92	0.90	0.86	0.91	0.94	0.95	1.00	0.93
S Company	0.97	0.96	0.93	0.88	0.90	0.91	1.00	0.93

Max 5% difference

\* MULTI V 5 condition : Partial defrost operation / Dual sensing  
\* Source : EPDB

### Outdoor Unit Noise Level

Noise Level of MULTI V 5 is less than S Company. (avg. 2 dB(A) gap)



Noise Level Comparison	HP	HP										
		8	10	12	14	16	18	20	22	24	26	
MULTI V. 5		58	58	59	60	60.5	61	62	64.5	65	65	
S Company		57	58	62	61	63	64	65	66	67	67	

\* Unit : dB(A), single unit comparison, refer to Cat'g

# SINGLE SPLIT



## COMPETITOR COMPARISON | CEILING CONCEALED DUCT

SINGLE SPLIT

A COMPANY



### Expanded Line-up Coverage with Minimum SKU\*

The Number of ODU has been reduced to 5 and it covers 9 ~ 60kBTU/h. D company has 25 ODU covering 12 ~ 48kBTU/h.

Company	Line-up	kBTU/h		18		21		24		30		36		42		48		60	
		9	12	5.0	6.0	6.8	8.0	9.5	12.1	13.4	14.4								
		kW	2.5	3.4	5.0	6.0	6.8	8.0	9.5	12.1	13.4	14.4							
LG	High		UUA1	UUB1			UUC1			UUD1/3									
	Standard		UUA1	UUB1			UUC1			UUD1/3									
	Compact			UUA1			UUB1	UUC1											
D Company	Alpha		35A	50A	60A	71MV1 /MY1			100MV1 /MY1/MY1	125MV1 /MY1	140MV1 /MY1								
	Advanced						71MV1		100MV1 /MY1	125MV1 /MY1	140MV1 /MY1								
	Active						71N9		100MV1 /MY1	125MV1 /MY1	140MV1 /MY1								

\*SKU : Stock Keeping Unit

COMPARISON WITH COMPETITORS

# SINGLE SPLIT



## Key Spec. Comparison

Overall key specifications are competitive with that of D company's products.  
Especially, LG compact models have comparable spec. with D company's standard models.

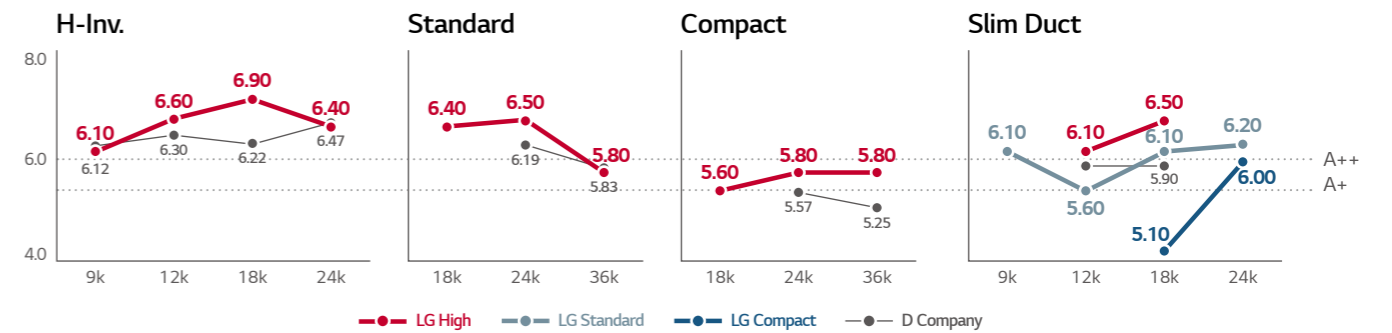
\* Models : 36k Cassette

Comparison Items	Unit	High			Standard			Compact		
		LG	D company		LG	D company		LG	D company	
SEER (Grade)		7.60 (A++)	7.35 (A++)	●	7.00 (A++)	6.55 (A+)	●	6.60 (A++)	5.67 (A+)	●
SCOP (Grade)		4.50 (A+)	4.81 (A+)	●	4.30 (A+)	4.17 (A+)	●	4.10 (A+)	3.85 (A)	●
Operation Range (Cooling / Heating)	°C DB °C WB	-20 ~ 52 -25 ~ 18	-20 ~ 52 -20 ~ 18	●	-20 ~ 52 -25 ~ 18	-15 ~ 46 -15 ~ 15.5	●	-15 ~ 48 -15 ~ 18	-5 ~ 46 -15 ~ 15.5	●
Max. Pipe Length	m	85	85	=	85	50	●	50	30	●
Sound Power Lv. ODU	dB(A)	66	66	=	66	70	●	70	70	=
Sound Power Lv. IDU	dB(A)	59	61	●	61 <sup>1)</sup>	54	●	61 <sup>1)</sup>	54	●
Foot Print (ODU)	m²	0.31	0.30	=	0.31	0.30	=	0.31	0.30	=
Product Weight (ODU)	kg	87.5	92	●	87.5	70	●	57.7	70	●
IDU Air Flow (Low / High)	CMM	23.0 / 28.0	19.0 / 32.3	●	22.5 / 27.5	12.4 / 22.8	●	22.5 / 27.5	12.4 / 22.8	●

1) Low Noise Mode (Installer Option)

## SEER

Seasonal Efficiency of LG product are mostly higher than D Company.  
All models have the energy efficiency class of A + or higher.

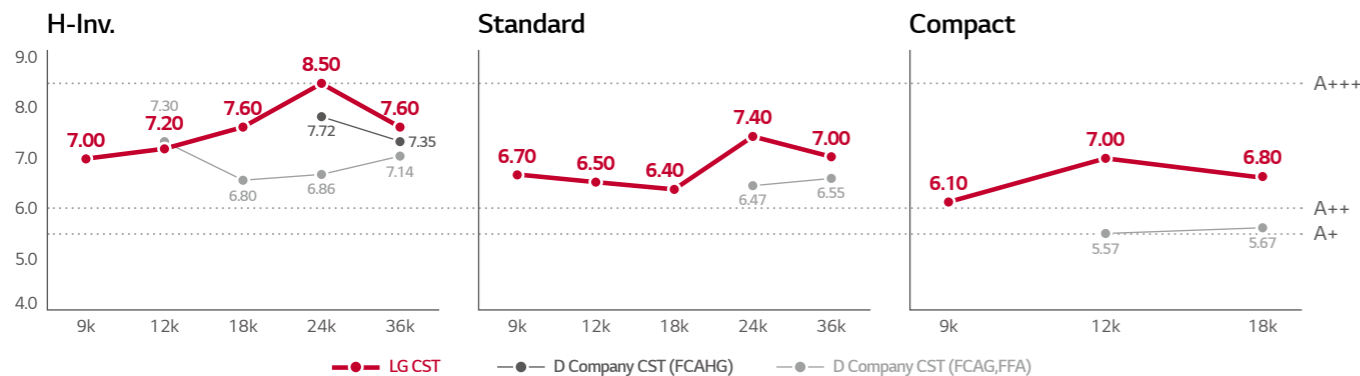


SEER	Duct (Mid Static Pressure)		12k	18k	24k	36k	42k	48k
	High	LG	<b>6.10</b>	<b>6.60</b>	<b>6.90</b>	<b>6.40</b>	<b>6.20</b>	<b>6.10</b>
	D	6.12	6.30	6.22	6.47	6.19	6.42	
Standard	LG	<b>6.40</b>	<b>6.50</b>	<b>5.80</b>				
	D			6.19	5.83	5.49	5.81	
Compact	LG	<b>5.60</b>	<b>5.80</b>	<b>5.80</b>				
	D			5.57	5.25	4.85	5.50	

SEER	Duct (Low Static Pressure)		9k	12k	18k	24k
	High	LG	<b>6.10</b>	<b>6.50</b>		
	D		5.90	5.90		
Standard	LG	<b>5.60</b>	<b>5.60</b>	<b>6.10</b>	<b>6.20</b>	
Compact	LG			<b>5.80</b>	<b>6.00</b>	

## SEER

Seasonal Efficiency of LG product are mostly higher than D Company.  
Highest Efficiency (SEER up to 8.50, A+++ ) in the market.

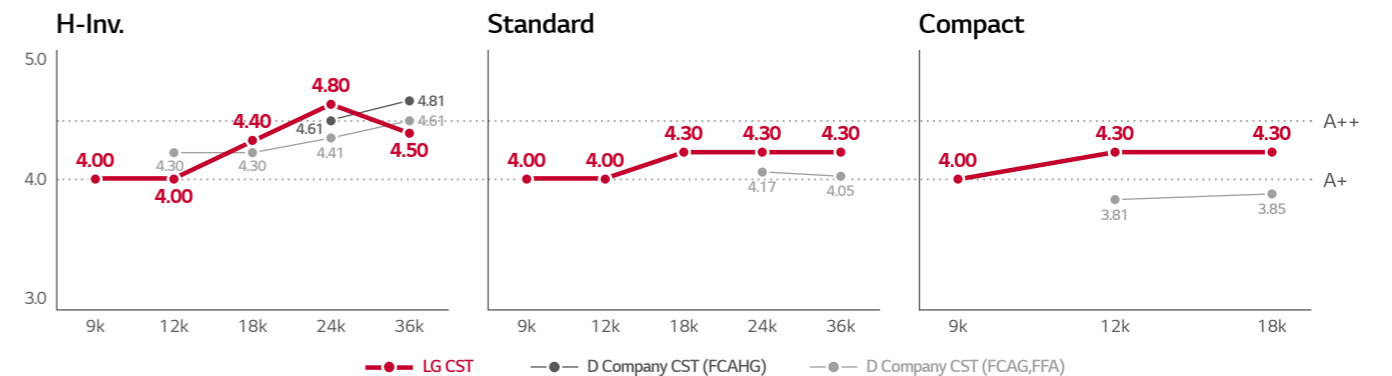


SEER	Cassette (840x840)		12k	18k	24k	36k	42k	48k
	High	LG	<b>7.60</b>	<b>8.50</b>	<b>7.60</b>	<b>7.40</b>	<b>6.80</b>	
		D(SH)		7.72	7.35	8.02	7.93	
	D		7.30	6.80	6.86	7.14	7.80	7.17
	Standard	LG	<b>7.40</b>	<b>7.00</b>	<b>7.00</b>	<b>6.50</b>		
D			6.47	6.55	5.76	6.53		
Compact	LG	<b>7.00</b>	<b>6.80</b>					
D			5.57	5.67	5.40	6.00		

SEER	Mini Cassette (570x570)		9k	12k	18k
	High	LG	<b>7.00</b>	<b>7.20</b>	
	D			6.40	6.30
Standard	LG	<b>6.70</b>	<b>6.50</b>	<b>6.40</b>	
Compact	LG			<b>6.10</b>	

## SCOP

Seasonal Efficiency of LG product are mostly higher than D Company.  
Compact models are also compatible with D company's standard models.



SCOP	Cassette (840x840)		12k	18k	24k	36k	42k	48k
	High	LG	<b>4.40</b>	<b>4.80</b>	<b>4.50</b>	<b>4.50</b>	<b>4.50</b>	
		D(SH)		4.61	4.81	4.53	4.44	
	D		4.30	4.30	4.41	4.61	4.34	4.34
	Standard	LG	<b>4.40</b>	<b>4.30</b>	<b>4.30</b>	<b>4.20</b>		
D			4.17	4.05	4.31	4.17		
Compact	LG	<b>4.30</b>	<b>4.30</b>					
D			3.81	3.85	3.80	4.31		

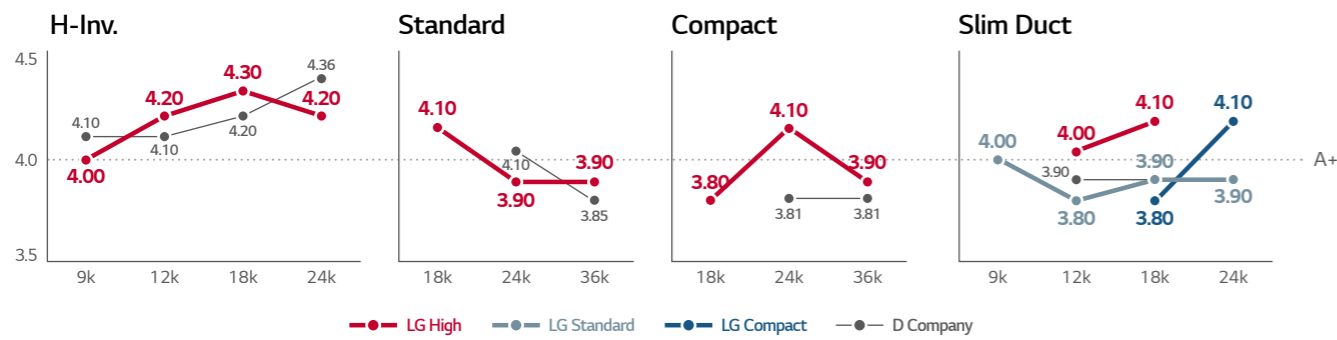
SCOP	Mini Cassette (570x570)		9k	12k	18k
	High	LG	<b>4.30</b>	<b>4.30</b>	
	D			3.80	4.01
Standard	LG	<b>4.30</b>	<b>4.40</b>	<b>4.30</b>	
Compact	LG			<b>4.00</b>	

# COMPARISON WITH COMPETITORS

## SINGLE SPLIT

### SCOP

Heating Seasonal Efficiency of LG product are mostly higher than D Company. Compact models are also compatible with D company's standard models.



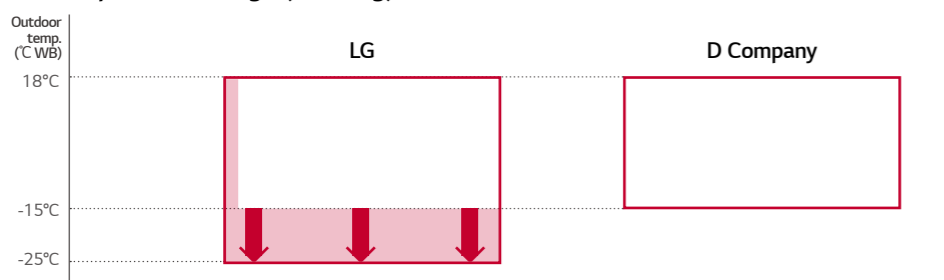
Duct (Mid Static Pressure)		12k	18k	24k	36k	42k	48k	
SCOP	High	LG	4.00	4.20	4.30	4.20	4.10	4.10
		D	4.10	4.10	4.20	4.36	4.12	4.11
	Standard	LG	4.10	3.90	3.90	3.90	3.90	4.00
		D		4.01	3.85	3.63	3.85	
	Compact	LG	3.80	4.10	3.90			
		D		3.81	3.81	3.55	3.85	

Duct (Low Static Pressure)		9k	12k	18k	24k	
SCOP	High	LG	4.00	4.10		
		D	3.90	3.90		
	Standard	LG	4.00	3.80	3.90	3.90
		D			3.90	4.10
	Compact	LG			3.90	
		D				

### Wide Operation Range

Wide operation range ensures stable performance against extreme outdoor conditions.

#### Max. Operation Range (Heating)



#### Heating Operation Range (°C WB)

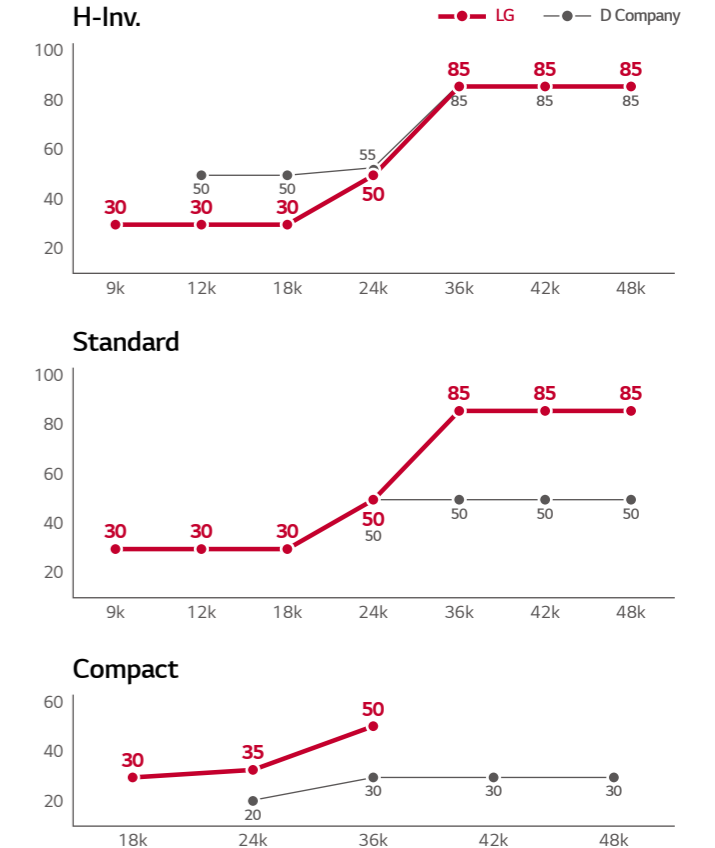
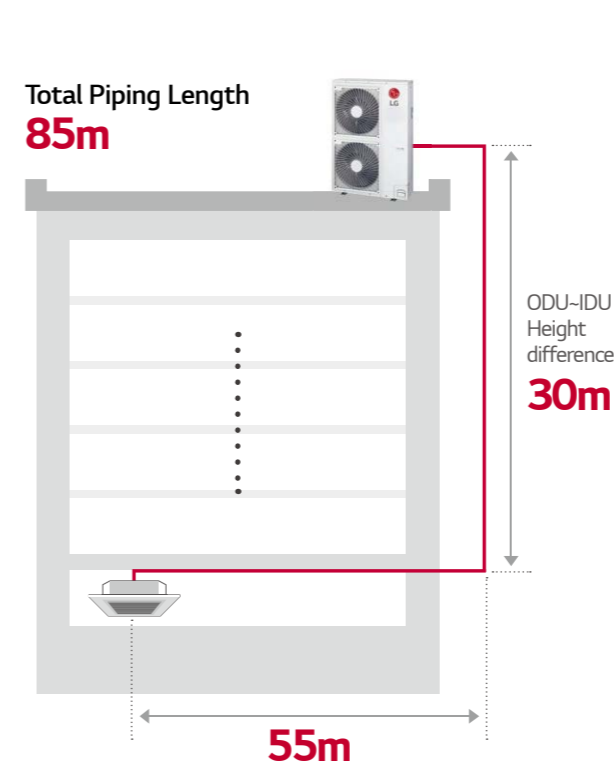
Capacity(kW)	9k	12k	18k	24k	30k	36k	42k	48k
LG	High		-20 ~ 18				-25 ~ 18	
	Standard		-20 ~ 18				-25 ~ 18	
	Compact	-	-10 ~ 18	-15 ~ 18				
D	Alpha			-20 ~ 18				
	Advanced				-15 ~ 15.5			
D	Active		-15 ~ 18		-15 ~ 15.5			

#### Cooling Operation Range (°C DB)

Capacity(kW)	9k	12k	18k	24k	30k	36k	42k	48k
LG	High		-15 ~ 50		-20 ~ 50		-20 ~ 52	
	Standard		-15 ~ 50		-20 ~ 50		-20 ~ 52	
	Compact			-10 ~ 50	-10 ~ 48	-20 ~ 50		
D	Alpha				-20 ~ 52			
	Advanced					-15 ~ 46		
D	Active			-10 ~ 46		-5 ~ 46		

### Flexible Installation

LG Standard models as well as H-Inverter can be installed in 85m long distance between indoor and outdoor unit, and 30 m elevation between indoor units. Design flexibility is enhanced.



### Intelligent Sensors

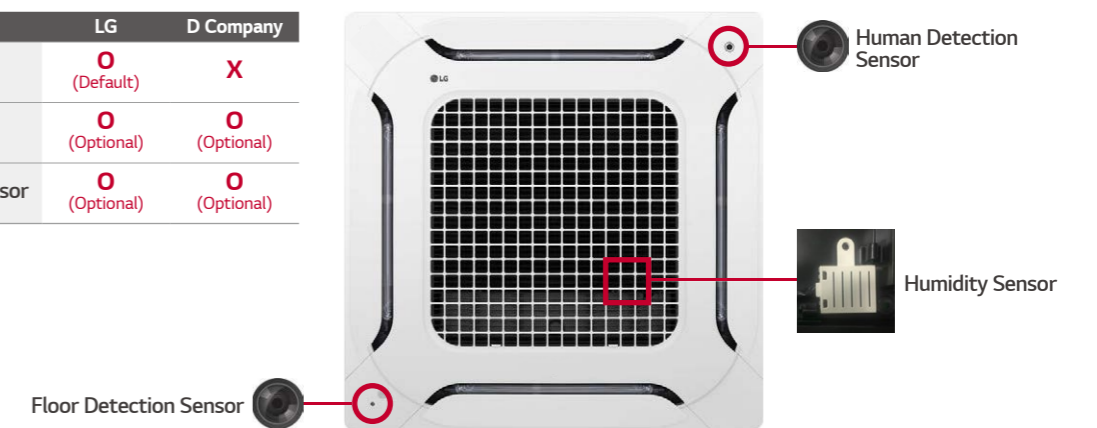
LG improves energy efficiency and comfort using 3 intelligent sensors.

- Humidity Sensor, Human Detection Sensor, Floor Detection Sensor.

D company applies Presence and Floor Sensor.

It makes the comfortable condition faster with temperature and humidity sensor.

	LG	D Company
Humidity Sensor	○ (Default)	✗
Floor Sensor	○ (Optional)	○ (Optional)
Human (Presence) Sensor	○ (Optional)	○ (Optional)



# MULTI SPLIT



## COMPETITOR COMPARISON | CEILING CONCEALED DUCT

### MULTI SPLIT

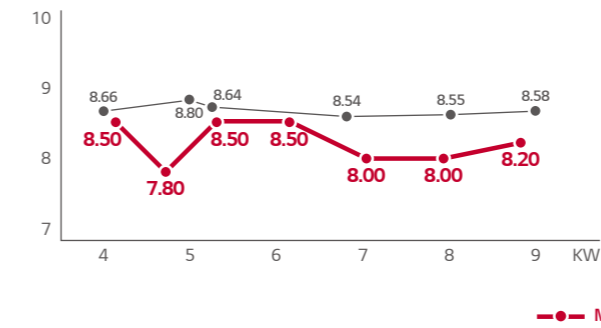
### A COMPANY



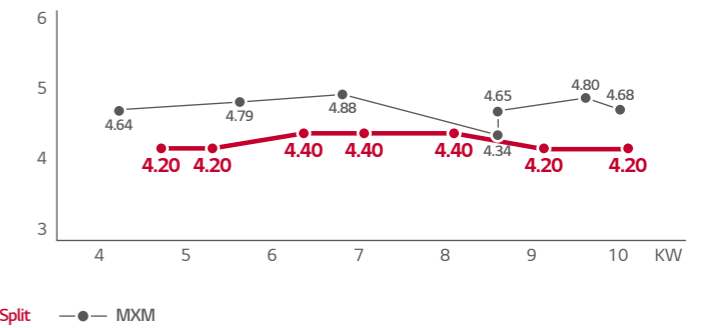
## Comparison of SEER / SCOP (rated)

MULTI Split has worse efficiency than D company's products at the rated cooling / heating conditions.

### SEER Comparison



### SCOP Comparison

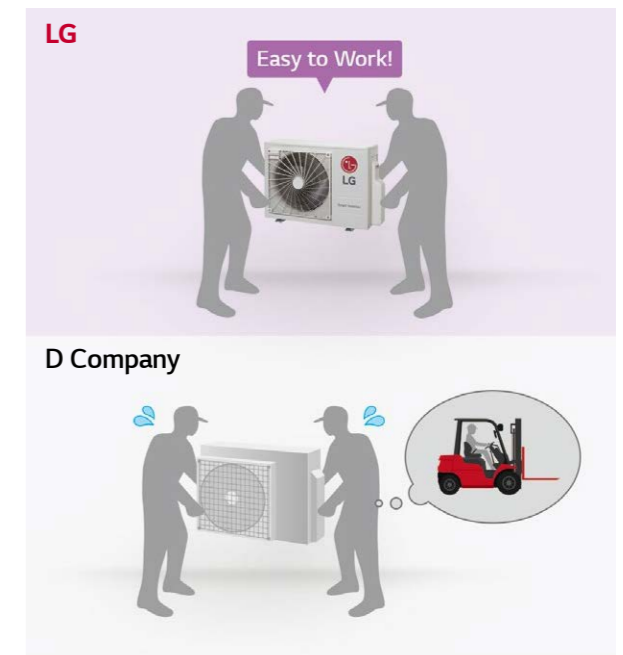
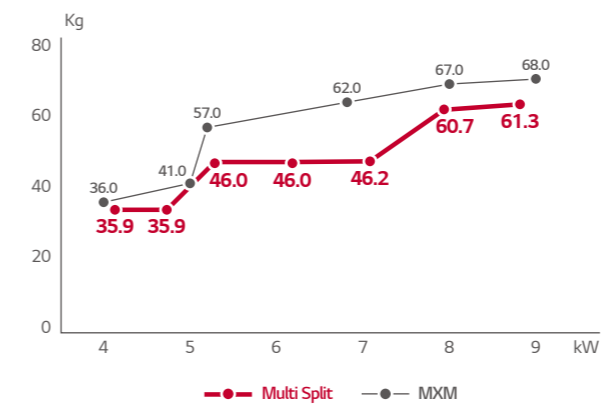
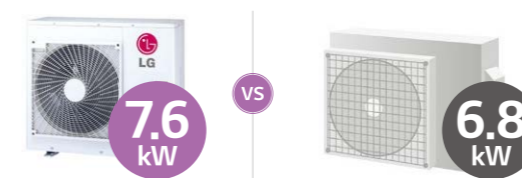


Cooling Test Condition		
Company	LG	D
Indoor (DB/WB)	27 °C / 19 °C	27 °C / 19 °C
Outdoor (DB/WB)	35 °C / 24 °C	35 °C / 24 °C
Level difference	0 m	0 m

Heating Test Condition		
Company	LG	D
Indoor (DB/WB)	20 °C / 15 °C	20 °C / 15 °C
Outdoor (DB/WB)	7 °C / 6 °C	7 °C / 6 °C
Level difference	0 m	0 m

## Comparison of weights

MULTI Split is lighter than D company's products in the all capacity range. It makes installation and maintenance easy, so customers can save costs.



# MULTI SPLIT



## Comparison of cooling operation ranges

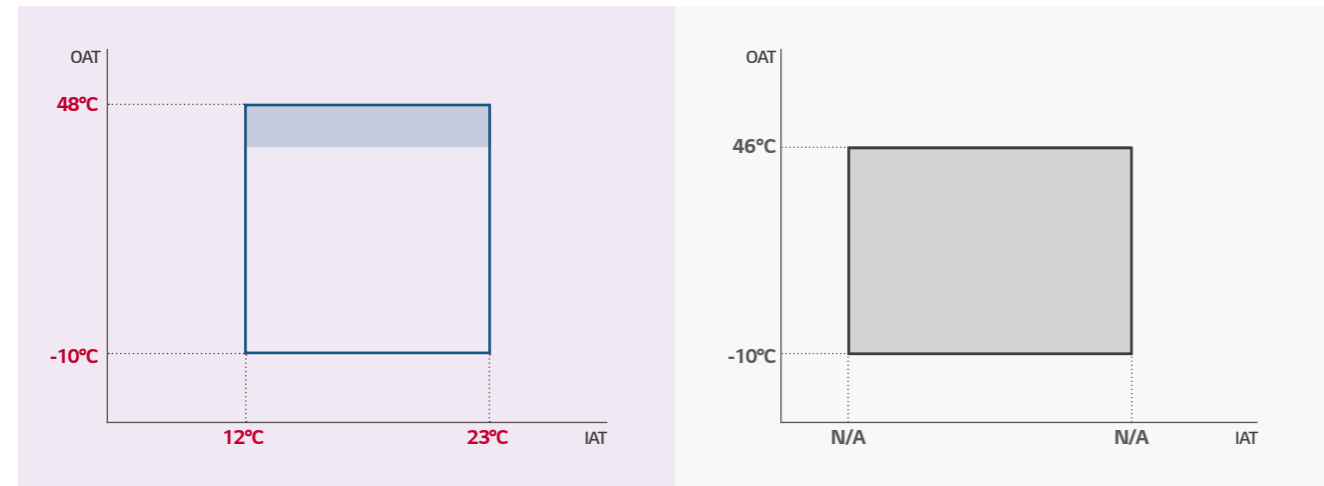
MULTI Split has a wider cooling operation range than D company's.

### MULTI SPLIT

Outdoor temperature range for cooling operation is **-10 ~ 48°C**

### MXM (D company)

Outdoor temperature range for cooling operation is **-10 ~ 46°C**



\* OAT : Outdoor Air Temperature  
\* IAT : Indoor Air Temperature

## Comparison of heating operation ranges

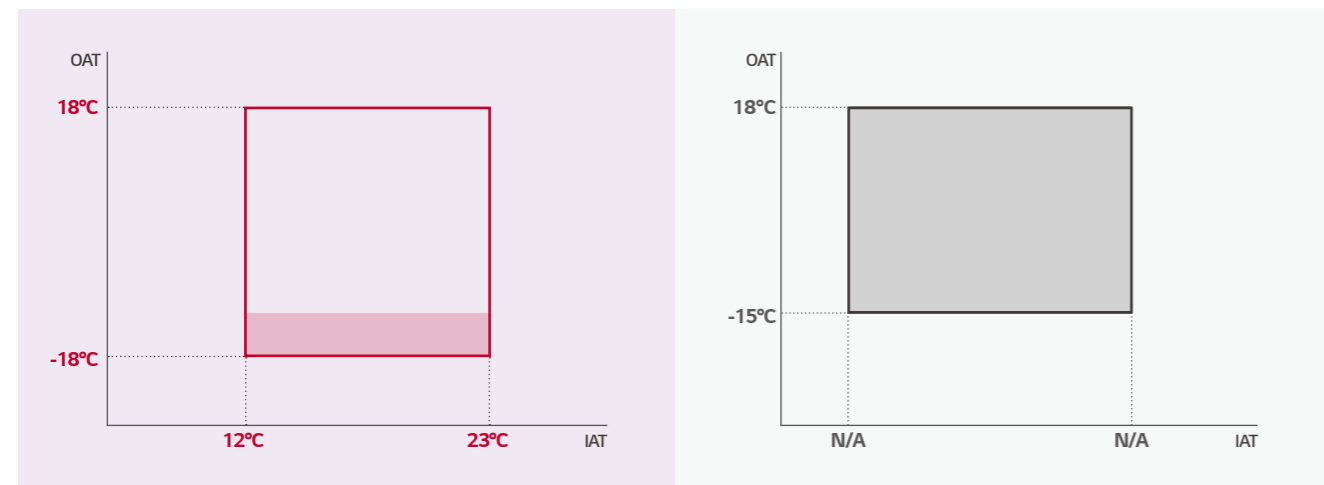
MULTI Split has a wider heating operation range than D company's.

### MULTI SPLIT

Outdoor temperature range for heating operation is **-18 ~ 18°C**

### MXM (D company)

Outdoor temperature range for heating operation is **-15 ~ 18°C**

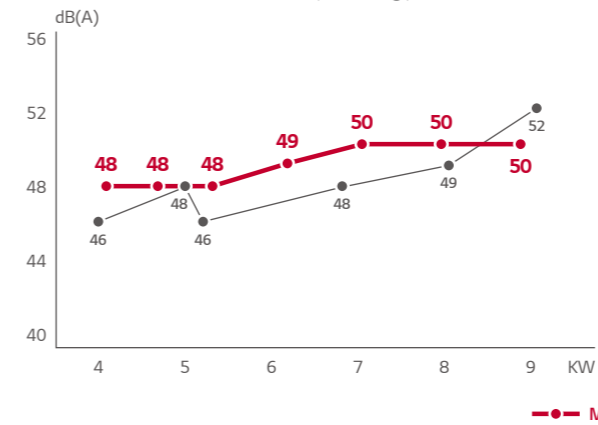


\* OAT : Outdoor Air Temperature  
\* IAT : Indoor Air Temperature

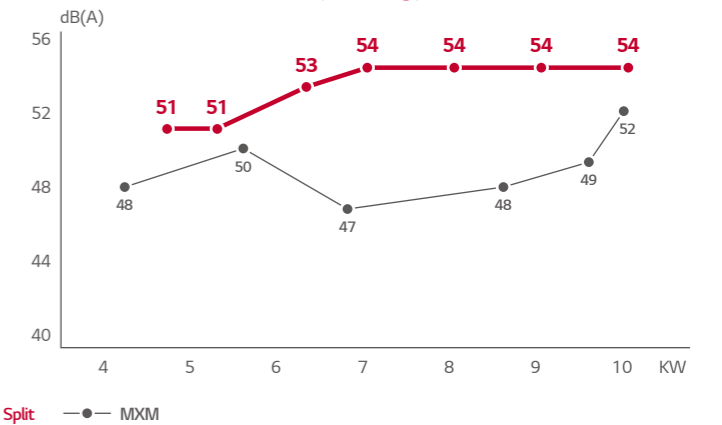
## Comparison of sound pressure levels

MULTI Split has worse sound levels than those of D company's

### Sound Pressure Level (cooling)



### Sound Pressure Level (heating)



## Comparison of pipework limits

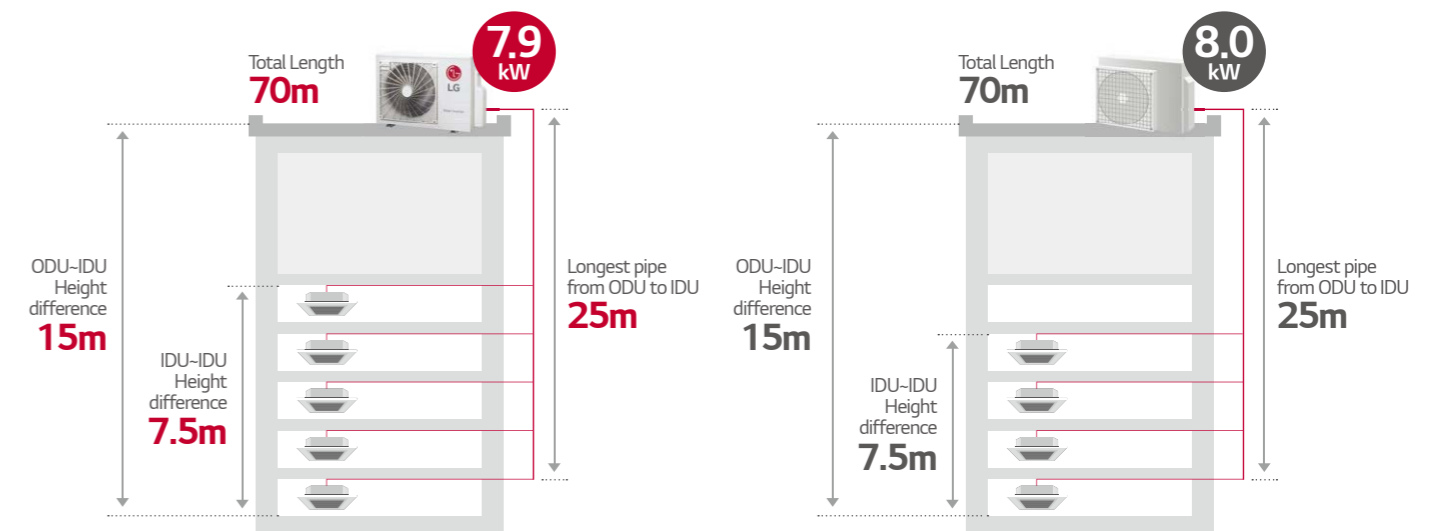
MULTI Split has similar flexibility for pipework with D company's.

### MULTI SPLIT

kW	Total Length (Max, m)	Longest Length (Max, m)	Elevation (ODU-IDU, m)	Elevation (IDU-IDU, m)
4.1	30	20	15	7.5
4.7	30	20	15	7.5
5.3	50	25	15	7.5
6.2	50	25	15	7.5
7.0	70	25	15	7.5
7.9	70	25	15	7.5
8.8	75	25	15	7.5

### MXM (D company)

HP	Total Length (Max, m)	Longest Length (Max, m)	Elevation (ODU-IDU, m)	Elevation (IDU-IDU, m)
4.0	30	20	15	7.5
5.0	30	20	15	7.5
4.0	50	25	15	7.5
5.2	50	25	15	7.5
6.8	50	25	15	7.5
6.8	60	25	15	7.5
8.0	70	25	15	7.5
9.0	75	25	15	7.5





# MULTI SPLIT



## Comparison of sizes

D company has a similar footprint as that of MULTI Split.

### MULTI SPLIT

Outdoor temperature range for cooling operation is **-10 ~ 48°C**

### MXM (D company)

Outdoor temperature range for cooling operation is **-10 ~ 46°C**



## Comparison of maximum IDUs

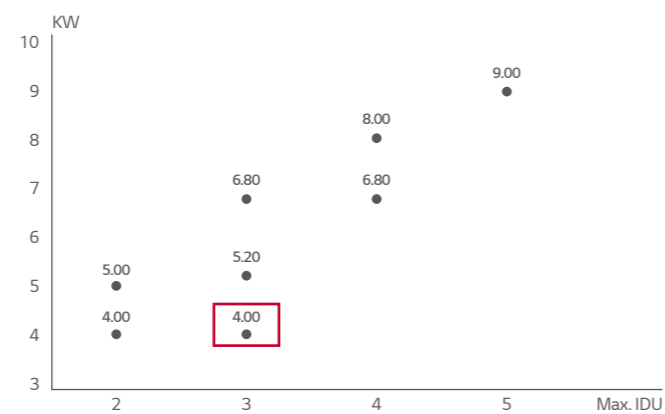
D company has one more ODU model which can be connected with 3 IDU units.

### MULTI SPLIT

kW	4.1	4.7	5.3	6.2	7.0	7.9	8.8
Max. IDU	2	3	3	4	4	5	5

### MXM (D company)

kW	4.0	5.0	4.0	5.0	6.8	6.8	8.0	9.0
Max. IDU	2	3	3	4	4	4	5	5



● Multi Split ● MXM

4

# ENGINEERING TOOL

## ENGINEERING TOOL

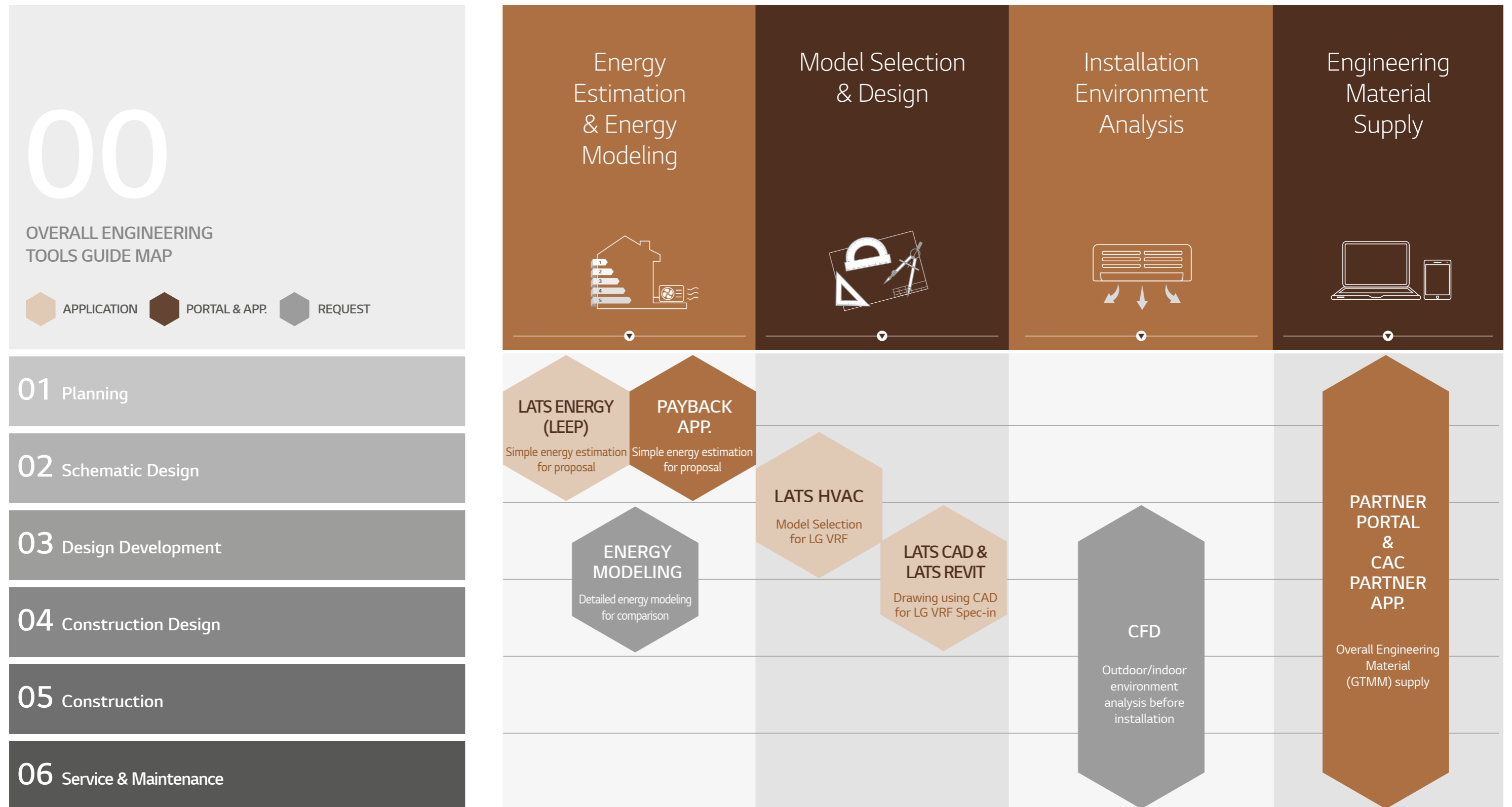
INTRO	260
LATS	272
CFD	292
ENG. MODELING	298

# OVERALL ENGINEERING TOOLS GUIDE MAP



## Overall Engineering Tools Guide map

LG offers engineering tools and solutions focused on HVAC, during the overall lifecycle of a building.



# ENGINEERING PROCESS



## Engineering Process

### Approach & Visiting



#### Approach & Visiting

Architects and consultants are the first to be appointed by building owners in the initial stage of design process. The key accounts management is very important for the success of the project.

### Proposal & Consulting



#### Proposal & Consulting

Service and maintenance is essential for the proper operation during the product life cycle, which results in saving of time and money.

### Spec-in



#### Spec-in

The project is qualified for the suitable air-conditioning system which is selected with the best product and solution through engineering service.

### Installation & Supervision



#### Installation & Supervision

The best products and solutions are presented with respect to building type, which creates more benefits for the customers.

### Service & Maintenance



#### Service & Maintenance

Securing quality of installation through supervision ensures continuous business there by enhancing for the customers.



## HVAC Tool & Support

# 00

**LATS**  
LG AIR-CONDITIONER  
TECHNICAL SOLUTION

01 Planning

02 Schematic Design

03 Design Development

04 Construction Design

05 Construction

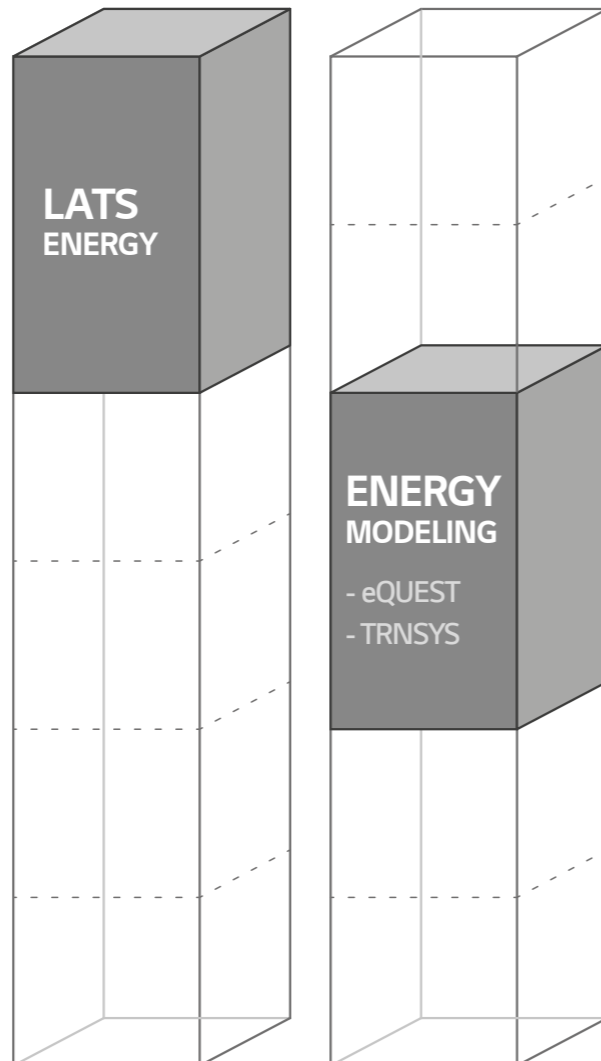
06 Service & Maintenance



# 01



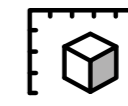
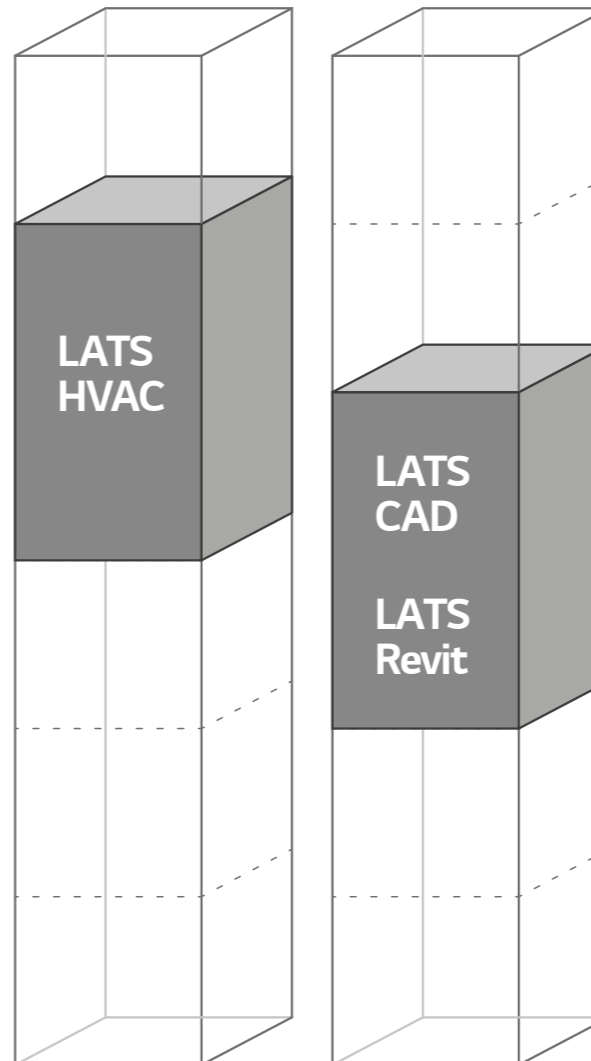
### Energy Estimation & Energy Modeling



# 02



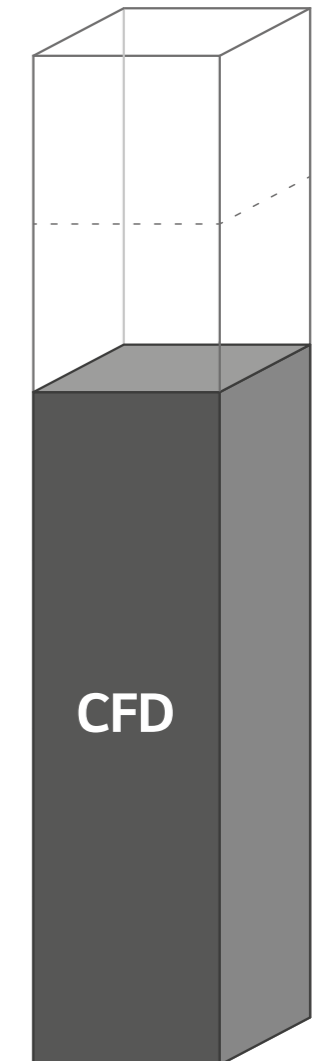
### Model Selection & Design



# 03



### Installation Environment Simulation



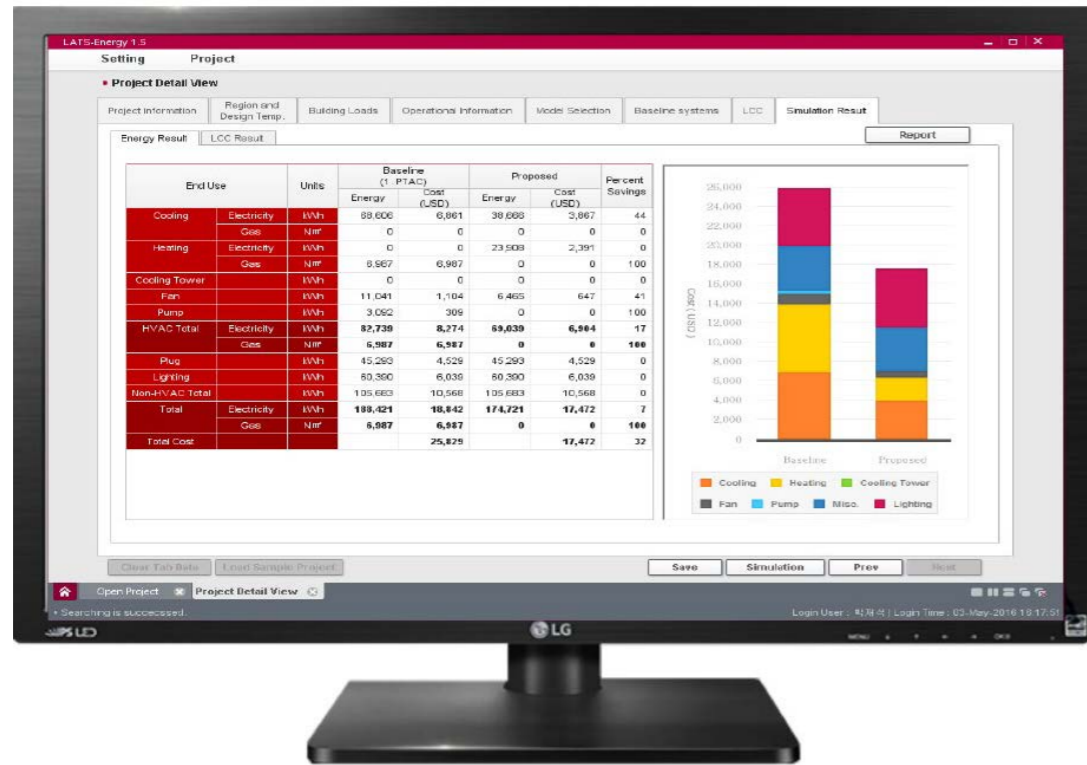
# ENGINEERING CAPABILITY



## Energy Estimation Tool

LATS CAD enables faster and a more accurate design of LG HVAC products. Moreover, it offers not only designing, but also quotation and installation review in order to minimize problems during installation processes.

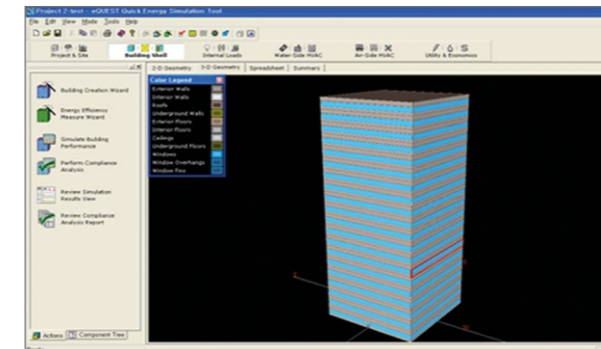
RESULT  
DRAFT ENERGY CONSUMPTION



## Energy Modeling Tool

These are certified commercial programs which assess the HVAC system efficiency and building's annual energy saving for building standard or certification like LEED.

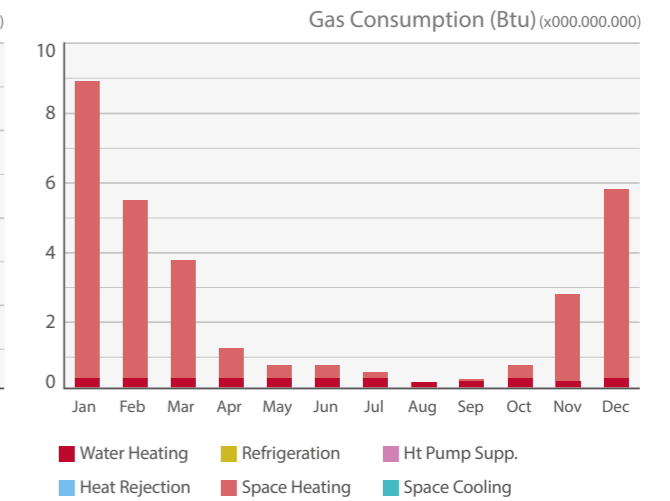
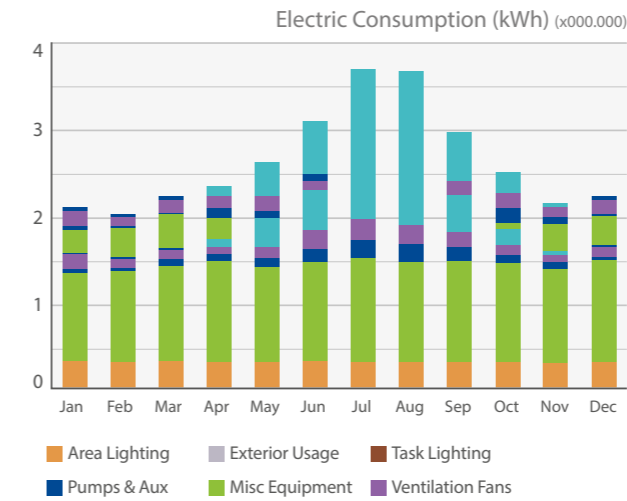
### Building Modeling



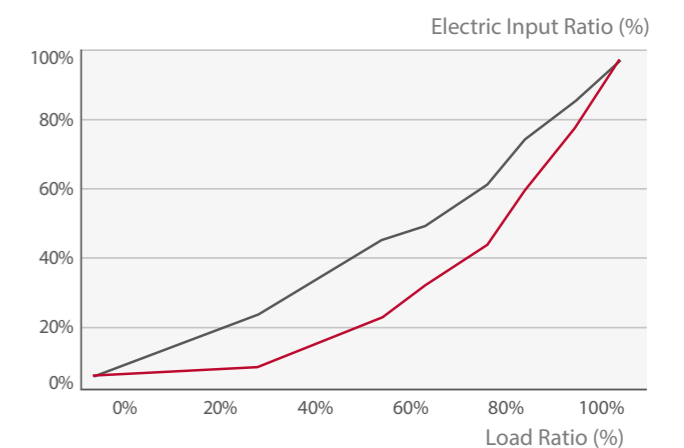
### HVAC System Modeling



### Energy Simulation Results



### Part Load Efficiency

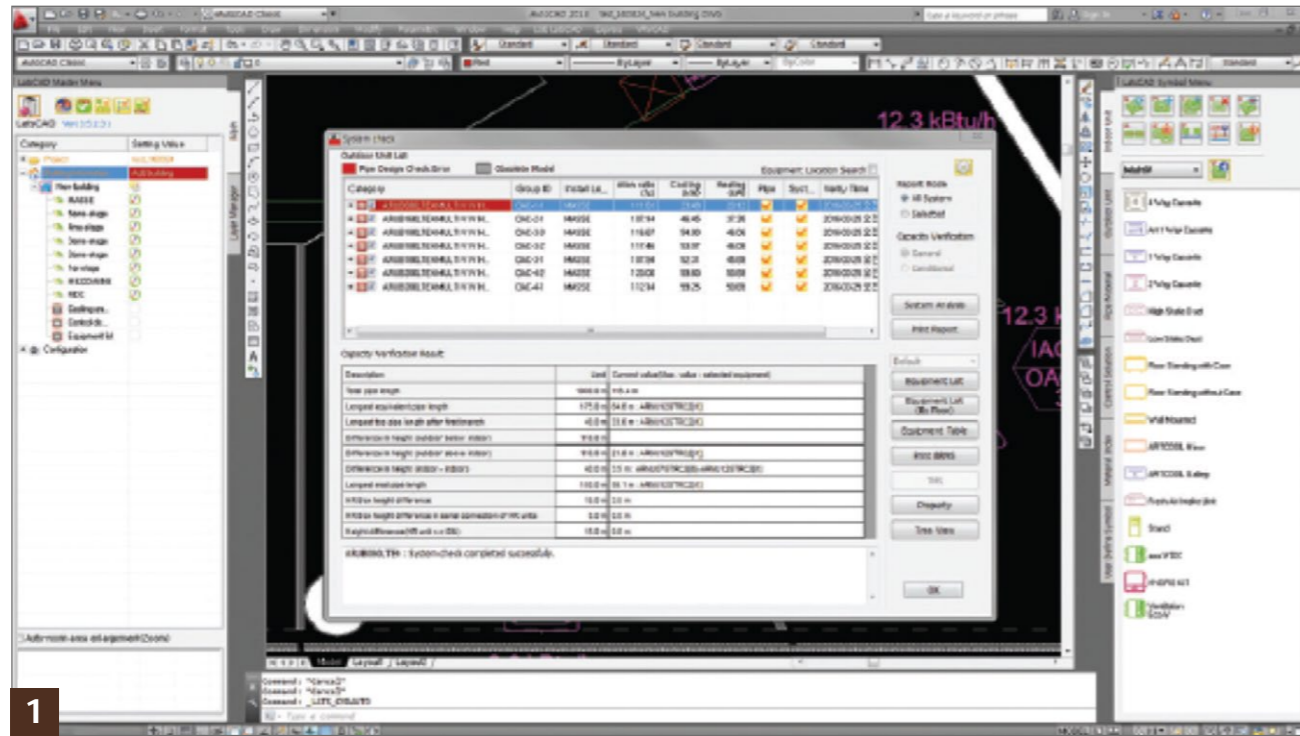


# ENGINEERING CAPABILITY



## Model Selection & Design

LATS CAD enables faster and a more accurate design of LG HVAC products. Moreover, it offers not only designing, but also quotation and installation review in order to minimize problems during installation processes.



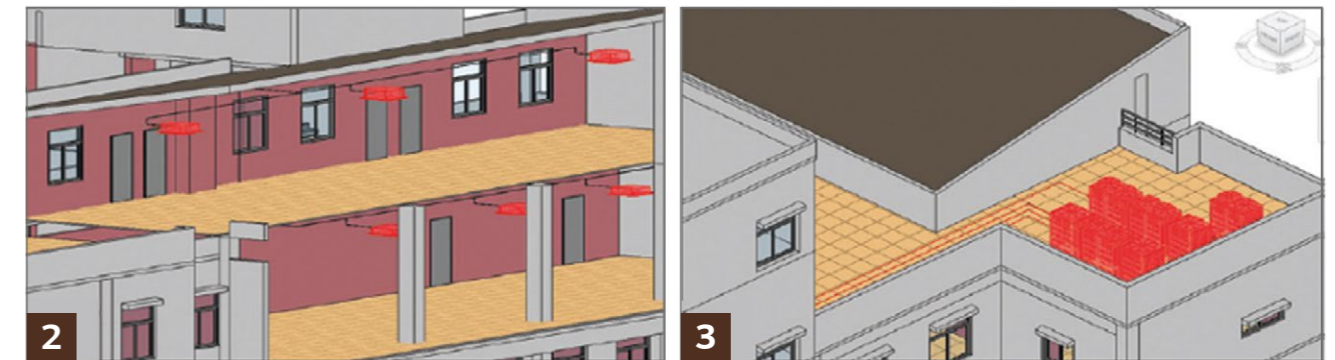
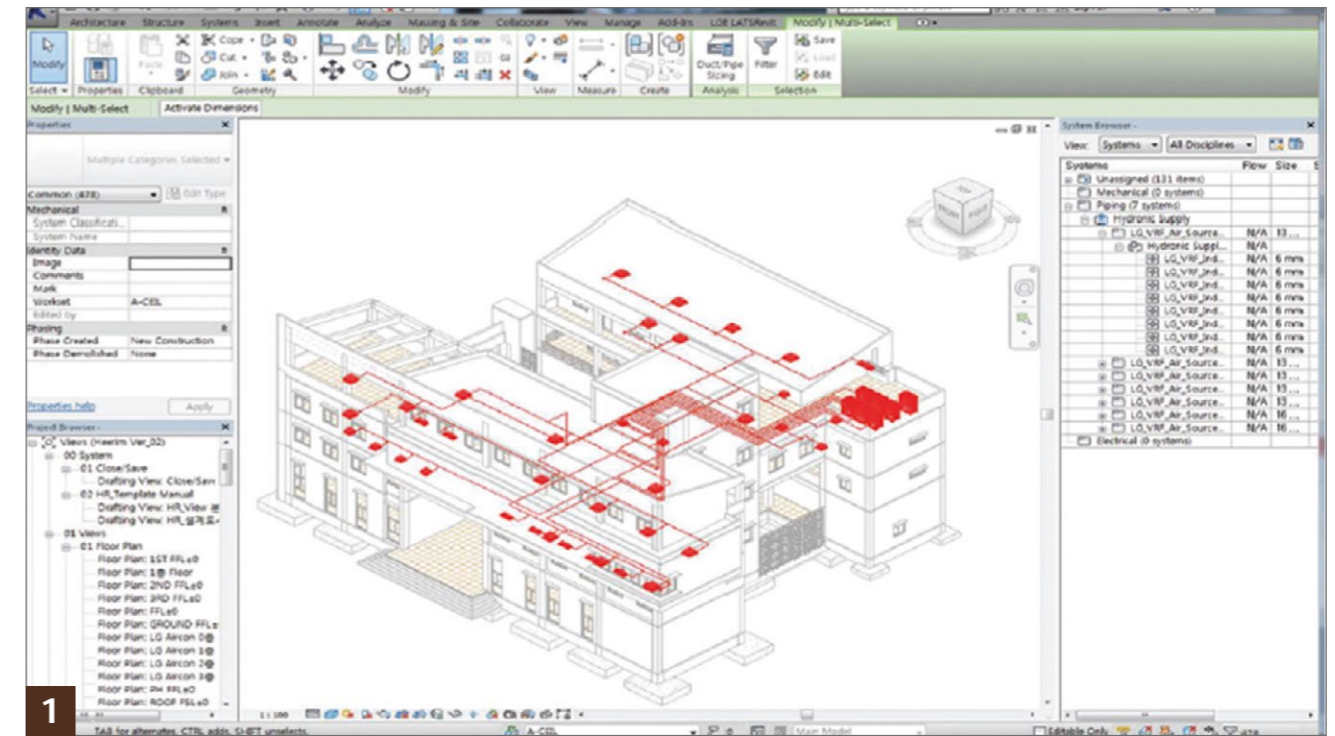
1. Drawing check (Installation review)
2. VRF system drawing
3. System diagram

\* LATS CAD is LG's designing program, aligned with AutoCAD.



## Model Selection & Design

LATS REVIT is developed to make 3D designing of LG HVAC products easier than the conventional program. It enables engineers to check 3D images from designing stage and prevents possible issues of the installation stage.



1. LATS REVIT running screen
2. Indoor unit 3D floor plan
3. Outdoor unit 3D floor plan

\* LATS REVIT is LG's 3D HVAC designing program, aligned with REVIT™

# ENGINEERING CAPABILITY



## Model Selection & Design

LATS HVAC is an integrated model selection program of LG HVAC products, enabling an accurate and quick selection on the best model suitable to each site. In addition to model selection, faster estimation on refrigerant piping diameter and additional refrigerant is possible, along with auto printing of reports.

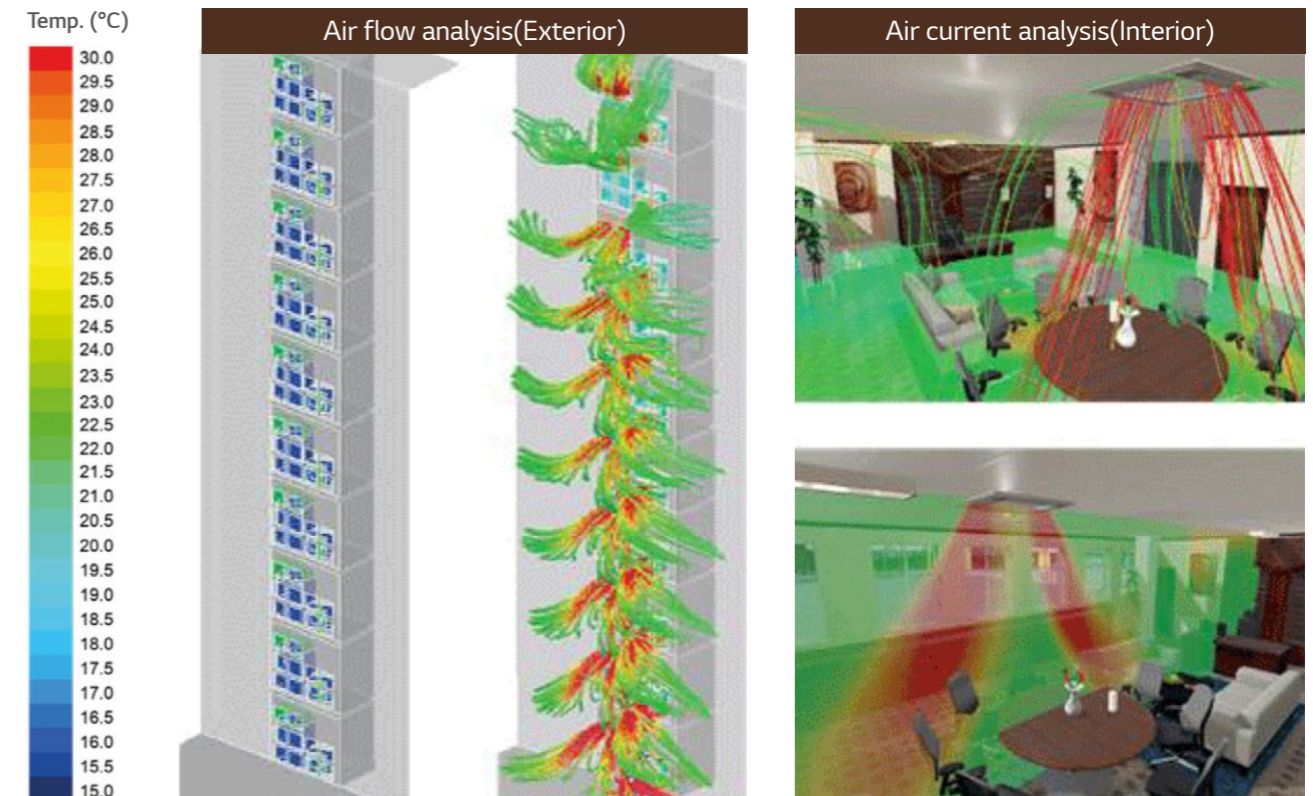
Model Name	Quantity	Unit Price	Total Price
ARNU300UTS4	1		0
<b>Total</b>	<b>1</b>		<b>0</b>
Model Name	Quantity	Unit Price	Total Price
ARNU18GTTCC	2		0
ARNU24GTTCC	1		0
ARNU18GTOCC	1		0
ARNU24GTRCC	1		0
ARNU28GTRCC	1		0
ARNU48GTRCC	1		0
ARNU42GBRA2	1		0
ARNU24GTLA2	1		0
ARNU24GTUC2	1		0
<b>Total</b>	<b>10</b>		<b>0</b>
Pipe Size	Length(m)	Unit Price	Total Price
8.25	0	0	0
9.52	43	0	0
12.7	29	0	0
15.00	29	0	0
19.05	26	0	0
22.2	8	0	0
28.58	20	0	0
34.9	20	0	0
<b>Total</b>	<b>184</b>	<b>0</b>	<b>0</b>
Model Name	Quantity	Unit Price	Total Price
ARBLN01621	4	0	0
ARBLN03321	4	0	0
ARBLN07121	1	0	0
ARCNV21	1	0	0
<b>Total</b>	<b>10</b>	<b>0</b>	<b>0</b>
Model Name	Quantity	Unit Price	Total Price
PT-MUC (DU)	2	0	0
PT-MGT (DU)	3	0	0
PT-MDC (DU)	1	0	0
<b>Total</b>	<b>6</b>	<b>0</b>	<b>0</b>

1. Automated pipe selection, additional refrigerant calculation
2. System check
3. Auto printing of estimation and result reports

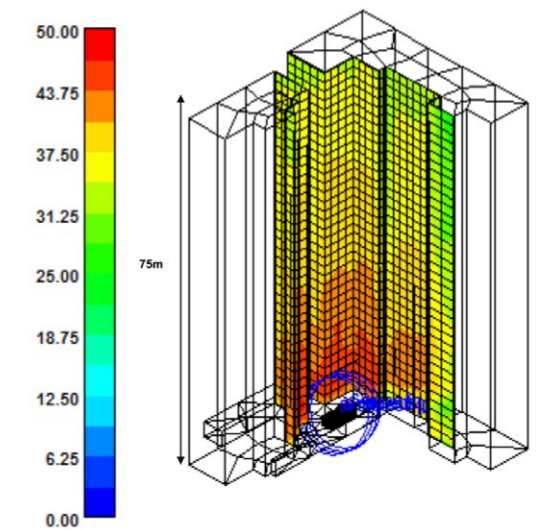


## Installation Environment Simulation

CFD Analysis is applied in areas of estimating: indoor airflow and temperature distribution while operating VRF products, outdoor airflow distribution, and noise level.



## Noise analysis





# LATS HVAC MODEL SELECTION TOOL



## What is LATS HVAC?

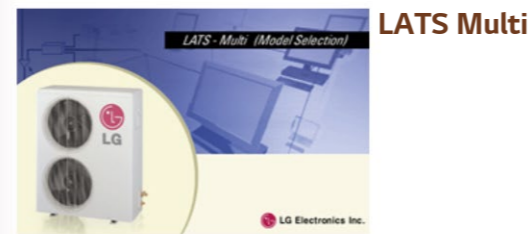
LATS HVAC program is an integrated model selection program for LG HVAC products.

### Key Feature

- Integrated model selection program
- Various kinds of report output
- Available all existing functions (LATS Multi V, Multi, Single, ERV)



LATS Multi V



LATS Multi



LATS Single



LATS ERV

\* Users can import previous version file, LATS Multi V, LATS Multi, LATS Single, and LATS ERV (No need to perform the same work that you have already done with previous version)

\* AHU / Chiller / GHP is available in some countries. (Contact your LG office)

## Key Features of LATS HVAC

LATS HVAC program helps to make a work of consultant (easier and faster.)

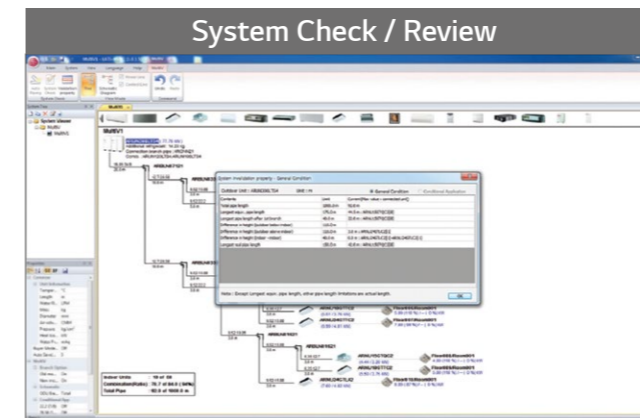
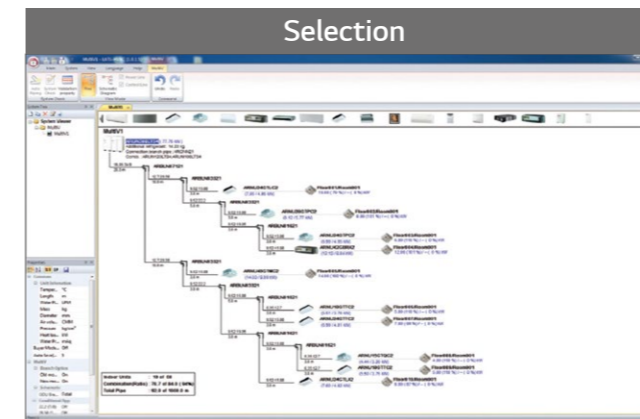
Easy & Quick use

Auto calculation for additional refrigeration

Auto pipe sizing & Branch selection

Check system of design

Auto generating report with simple invoice



### Result Report

LG Electronics Model Selection - Analysis

Project Name: Project\_20150326 03/26/2015  
System No: 1/1

1. Outdoor

Model Name	Quantity	Unit Price	Total Price
ARUN300LTS4	1		0
<b>Total</b>	<b>1</b>		<b>0</b>

2. Indoor Units

Model Name	Quantity	Unit Price	Total Price
ARNU18G TTC2	2		0
ARNU24G TTC2	1		0
ARNU18G TQC2	1		0
ARNU24G TPC2	1		0
ARNU28G TPC2	1		0
ARNU48G TMC2	1		0
ARNU42G BRA 2	1		0
ARNU24G TLA 2	1		0
ARNU24G TUC2	1		0
<b>Total</b>	<b>10</b>		<b>0</b>

3. Pipes

Outlet(Diam)	Length(m)	Unit Price	Total Price
6.35	9	0	0
9.52	43	0	0
12.7	29	0	0
15.88	29	0	0
19.05	26	0	0
22.2	8	0	0
25.58	20	0	0
34.9	20	0	0
<b>Total</b>	<b>154</b>	<b>0</b>	<b>0</b>

4. Branch/Header/Common pipe

Model Name	Quantity	Unit Price	Total Price
ARBLN01621	4		0
ARBLN03321	4		0
ARBLN07121	1		0
ARCN121	1		0
<b>Total</b>	<b>10</b>		<b>0</b>

5. Accessories

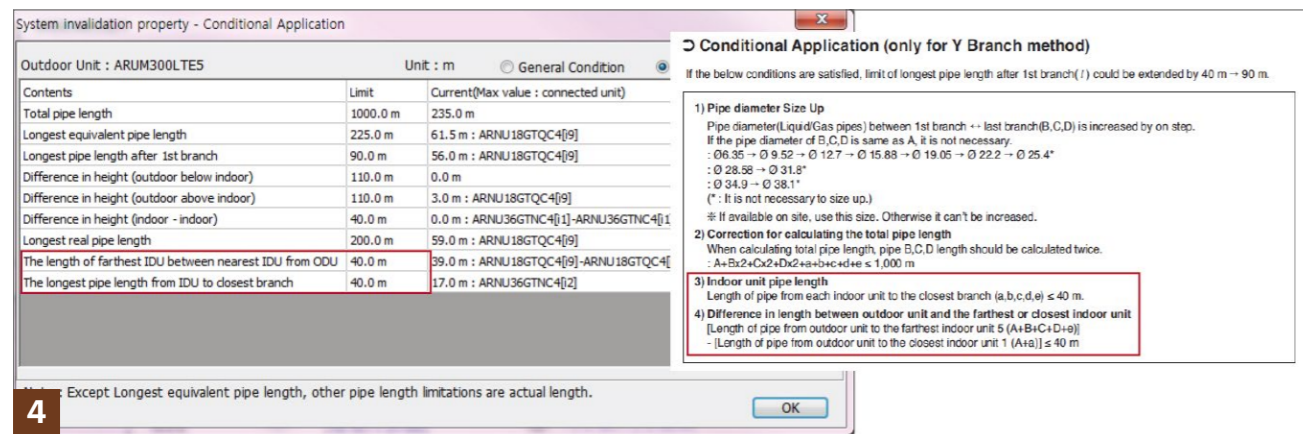
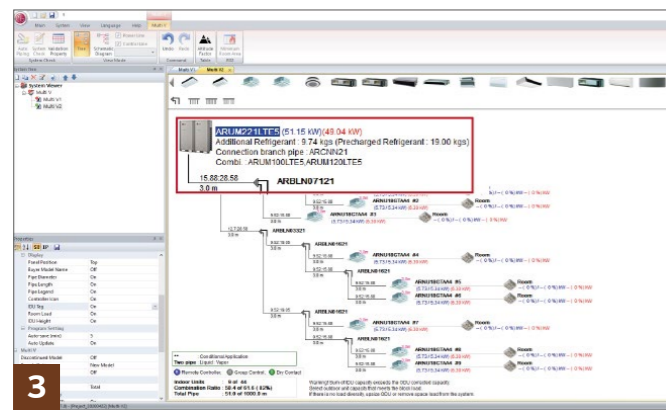
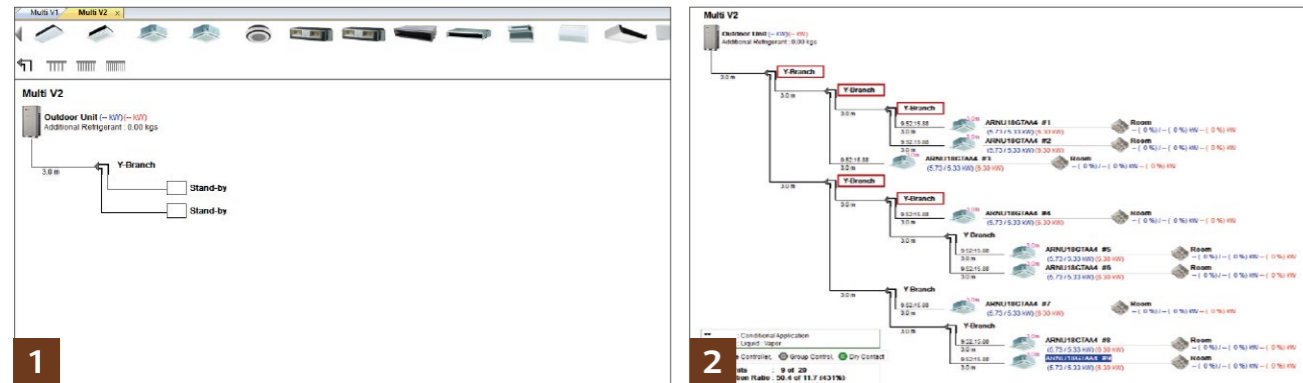
Model Name	Quantity	Unit Price	Total Price
PT-HLC (DU)	2		0
PT-UMC1 (DU)	3		0
PT-UQC (DU)	1		0
<b>Total</b>	<b>6</b>		<b>0</b>

# LATS HVAC MODEL SELECTION TOOL



## Key Features of LATS HVAC

LATS HVAC program is an integrated model selection program for LG HVAC products.



1. Easy & Quick Use
2. Auto pipe sizing & Branch selection
3. Auto calculation for Additional Refrigeration
4. Check System of Design

## Auto Generating Report

**LG Electronics** MULTI V  
ver 1.0.17.0

**Model Selection - Summary**

Project Name : Project\_20170919 **2017-09-20**

**1. Outdoor Units**

Model Name	Quantity	Description
ARUM260LTE5	2	50.60Hz/R410A/Heat Pump/MV5/EU
ARUM280LTE5	1	50.60Hz/R410A/Heat Pump/MV5/EU
<b>Total</b>	<b>3</b>	

**2. Indoor Units**

Model Name	Quantity	Description
ARNH04GK2A2	1	Hydro Kit
ARNU07GTRC4	1	Ceiling Cassette - 4Way
ARNU15GL2G4	8	Ceiling Concealed Duct - Low Static
ARNU18GTNC4	1	Ceiling Cassette - 4Way
ARNU18GTC4	1	Ceiling Cassette - 1Way
ARNU21GTQC4	1	Ceiling Cassette - 4Way
ARNU24GTL4	1	Ceiling Cassette - 2Way
ARNU24GTC4	1	Ceiling Cassette - 1Way
ARNU28GTPC4	2	Ceiling Cassette - 4Way
ARNU42GB8A4	1	Ceiling Concealed Duct - High Sensible
ARNU42GBG4	2	Ceiling Concealed Duct - High Static
ARNU42GTMC4	4	Ceiling Cassette - 4Way
ARNU54GBRA4	1	Ceiling Concealed Duct - High Static
ARNU54GTMC4	1	Ceiling Cassette - 4Way
<b>Total</b>	<b>26</b>	

**System Schematic Diagram** ver 1.7.7.0

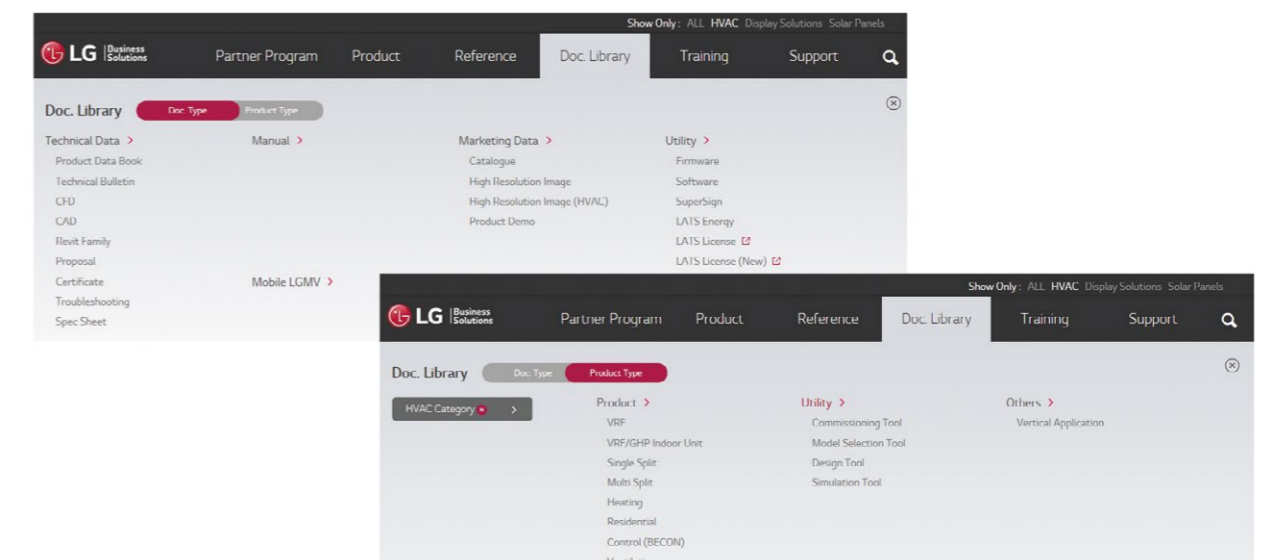
System Name: Multi V2  
System No : 2/2 **2020-04-22**

## How to Download?

You can download LATS HVAC from the B2B partner portal. In the following location, select the right version of LATS HVAC that meets the specifications of your PC.

<http://partner.lge.com/> >

Select Location > Doc. Library > Doc. Type > Utility > **Software** > Product Type > **Model Selection Tool**



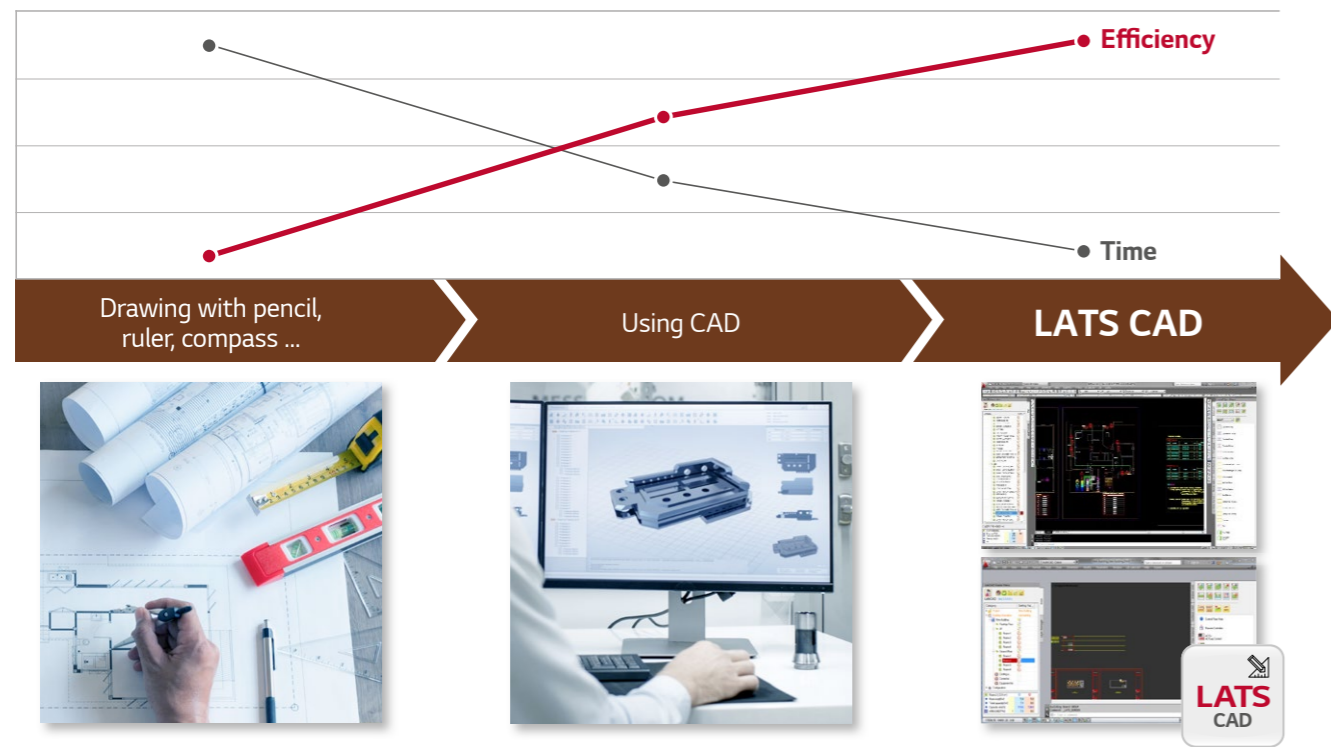
# LATS CAD 2D DRAWING TOOL



## Introduction of LATS CAD

The purpose of tools is to cut down the working time and to increase the work efficiency efficiency. In the actual case, using LATS CAD cuts down working time by 90% compared to using only AutoCAD.

## Purpose of Lats CAD



## Work Hour Example

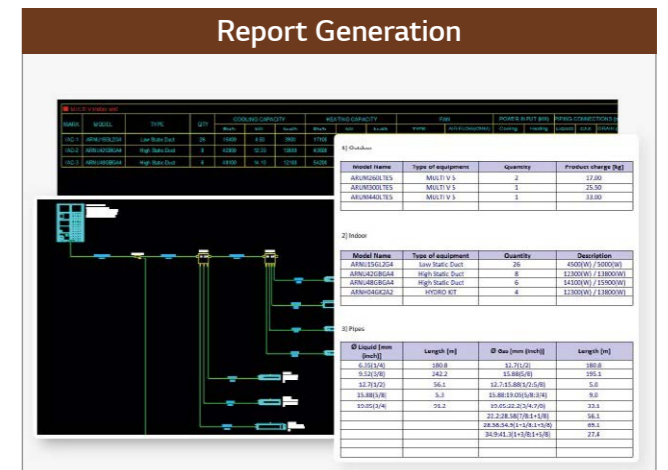
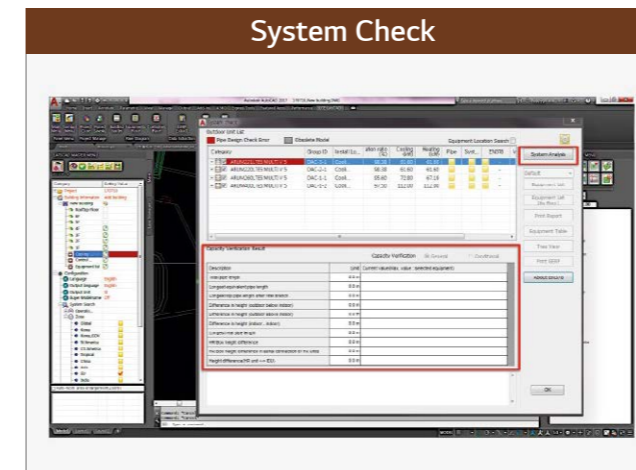
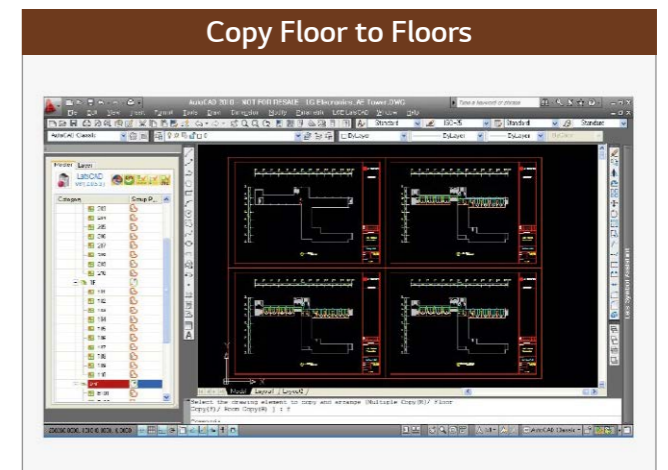
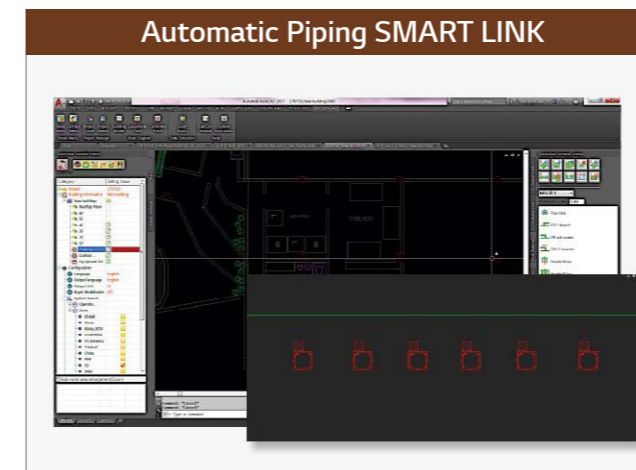
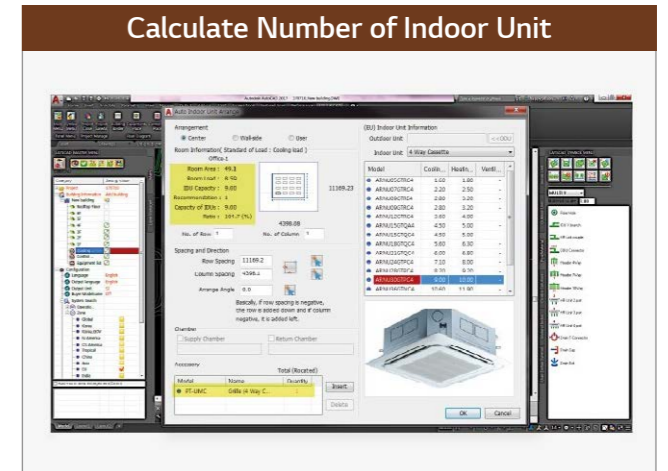
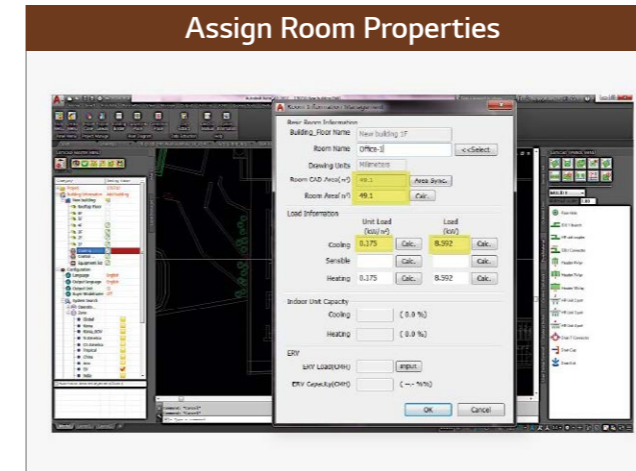
### 5 Story Building

108 Indoor Units, 21 Outdoor Units

	AutoCAD	LATS CAD
Unit Allocation	3 Hours	0.5 Hours
Pipe Connection	10 Hours	1 Hours
Filling Up Pipe Dimension	3 Hours	Automatic
Equipment Lists	1 Hours	Automatic
Schematic Diagram	3 Hours	0.5 Hours
<b>Total</b>	<b>20 Hours</b>	<b>2 Hours</b>

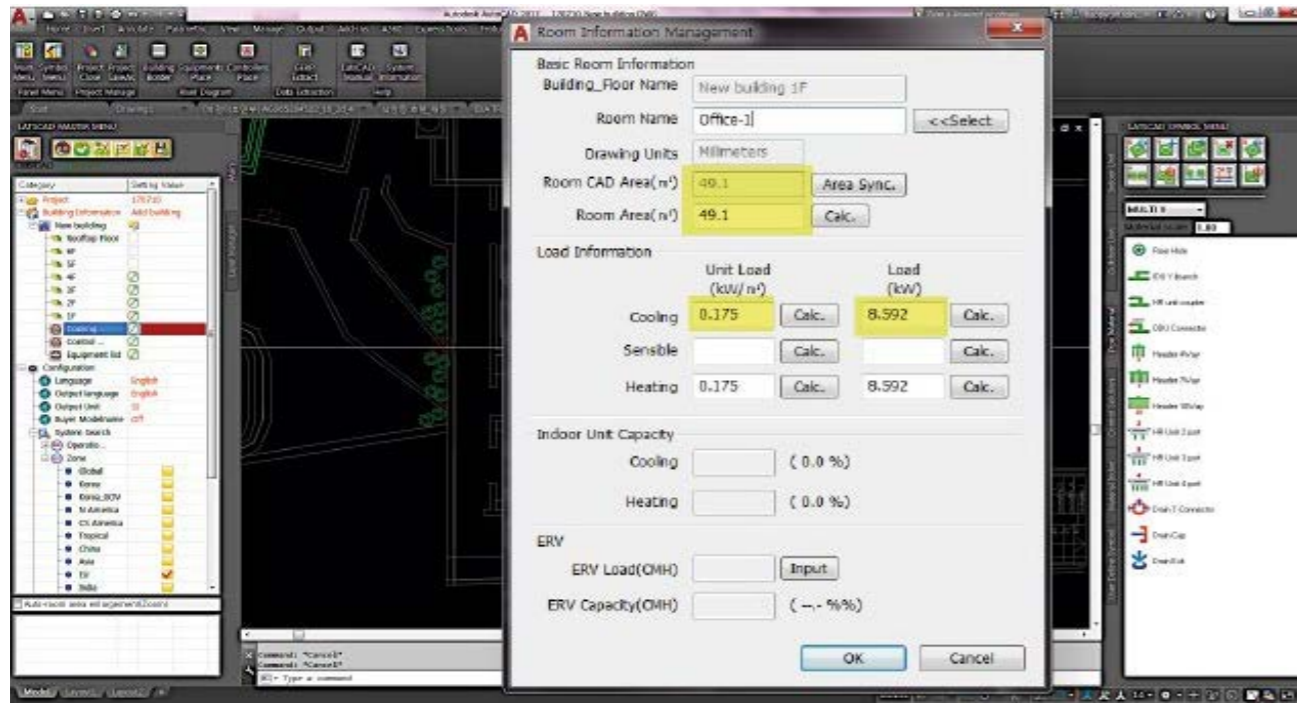
## Key Features of LATS CAD

With these functions, users save their working time and get more accurate result.

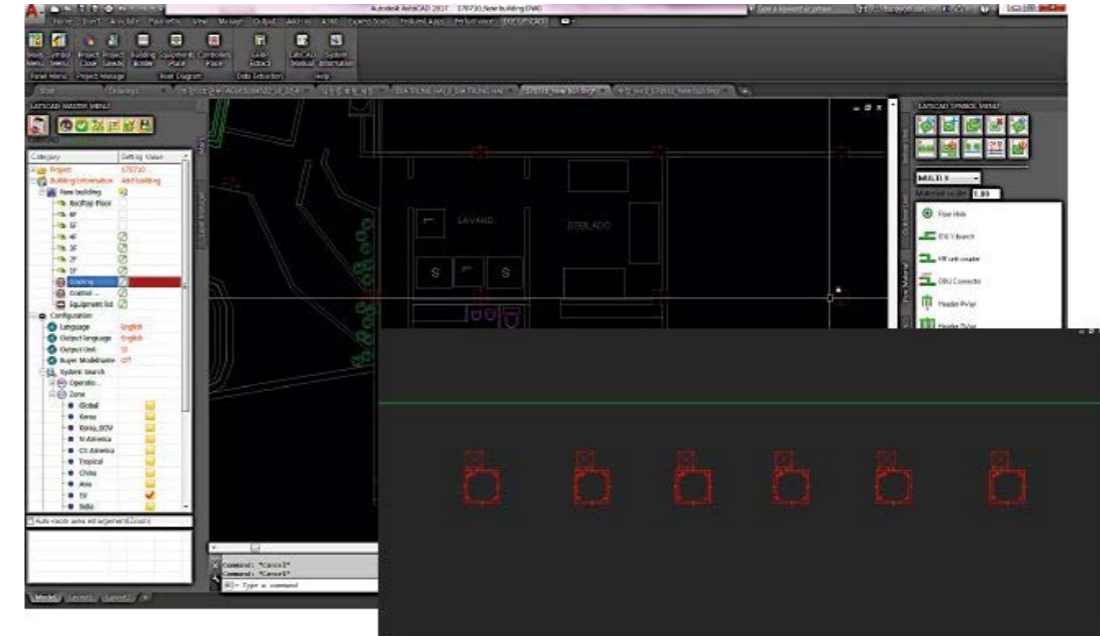




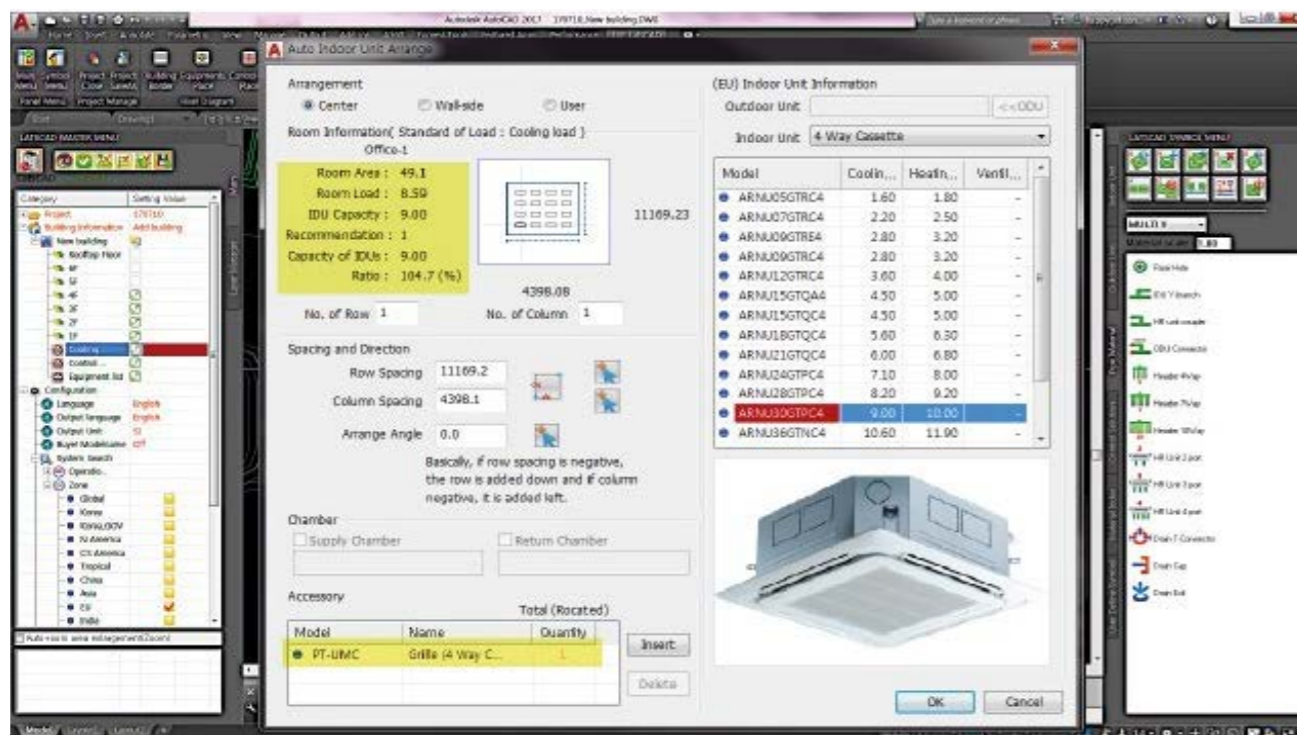
## Assign Room Properties



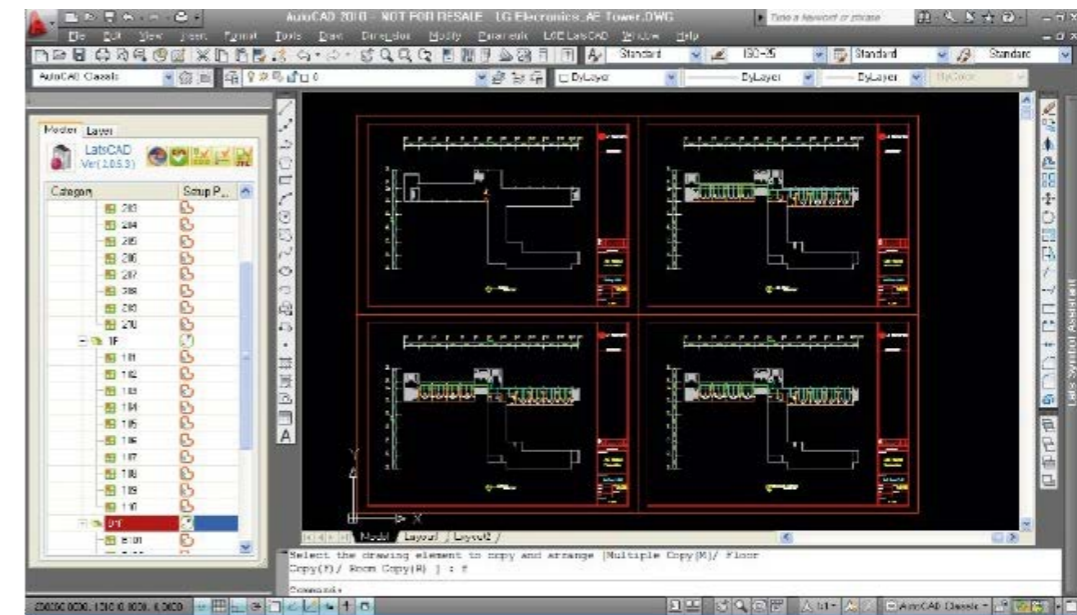
## Automatic Piping SMART LINK / Copy Floor to Floors



## Calculate Number of Indoor Unit



## System Check



# LATS CAD 2D DRAWING TOOL



## Report Generation

1) Outdoor

Model Name	Type of equipment	Quantity	Product charge [kg]
ARUM260LTES	MULTI V 5	2	17.00
ARUM300LTES	MULTI V 5	1	25.50
ARUM440LTES	MULTI V 5	1	33.00

2) Indoor

Model Name	Type of equipment	Quantity	Description
ARNM15G12G4	Low Static Duct	26	4500(W) / 5000(W)
ARNM42G1G4A	High Static Duct	8	12300(W) / 13800(W)
ARNM48G1G4A	High Static Duct	6	14100(W) / 15900(W)
ARNM4G1G2A2	HYDRO KIT	4	12300(W) / 13800(W)

3) Pipes

Ø Liquid [mm (inch)]	Length [m]	Ø Gas [mm (inch)]	Length [m]
6.35(1/4)	180.8	12.7(1/2)	180.8
9.52(3/8)	242.2	15.88(5/8)	195.1
12.7(1/2)	56.1	12.7(1/2)	5.0
15.88(5/8)	5.3	15.88(5/8)	9.0
19.05(3/4)	91.2	19.05(3/4)	33.1
		22.2(7/8)	56.1
		28.58(1.1+1/8)	69.1
		34.9(1.3+3/8)	27.4

## How to Download?

You can download LATS CAD from the B2B partner portal. In the following location, select the right version of LATS CAD that meets the specifications of your PC.

<http://partner.lge.com/> >

Select Location > Doc. Library > Doc. Type > Utility > **Software**  
> Product Type > **Design Tool**

The screenshot shows the navigation path: Partner Program > Product > Reference > Doc. Library > Training > Support. Under 'Doc. Library', 'Doc. Type' is set to 'Utility' and 'Product Type' is set to 'Design Tool'. The 'Utility' category is expanded to show 'LATS Energy' and 'LATS License (New)'.

# LATS ENERGY TOOL

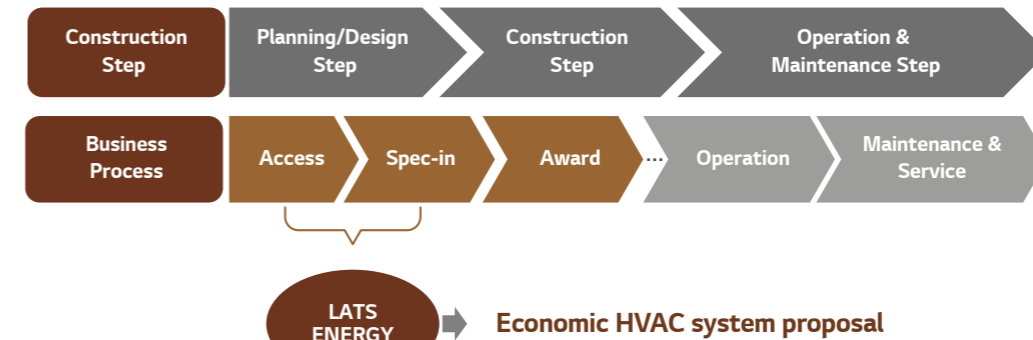


## LATS Energy : Simple Energy Calculation Tool

### What is LATS Energy?

LATS Energy is a simple energy calculation program, self-developed by LG. This tool calculates energy usage and energy cost of LG VRF systems based on weather profile. It can also compare LG VRF systems with other systems, such as ASHRAE baseline systems, chiller systems, other VRF systems, etc.

## Application of Energy Tool in HVAC Business



### Benefit



#### BUSINESS SUCCESS

- possibilities go UP!!
- Provide simulation based result
- Provide graphical data
- Provide consumption result quickly



#### ECONOMIC BENEFITS

- Choose Low operation cost system
- Raise building values with Building Energy Certification (e.g. LEED, BREEAM)
- Receive easily understandable comparison result

## LATS-Energy (Web based program)



### Features

- Global + US PGMS integration > Logic & merit/functions
- Save / Load project Function
- Web-based PGMS : Access from the B2B partner portal global website > easy update and access
- System comparison : Chiller (water-cooled, air-cooled, absorption), Other Heatpump, ASHRAE Standard system

# LATS ENERGY TOOL



## What Kind of Data Is In It?

With simple selection and input values, LATS Energy estimates annual energy cost of LG products and other system as well as shows comparison result.

### REGION

Automatically configure outdoor temperatures

### BUILDING INFORMATION

Type in peak Cooling /Heating load

### OPERATING SCHEDULE

Easily scheduling per day, week, and month

### LG PRODUCTS (PROPOSED)

Multi V air/water, Multi, or Single

### COMPARISON SYSTEM (BASELINE)

ASHRAE System, Chiller, or Other HeatPump

### SIMULATION RESULT & REPORT

Annual energy usage and cost

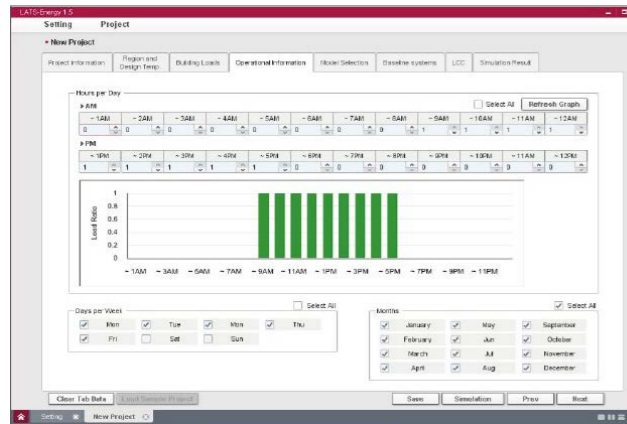
## Input – Region & Design Temperature

## Input – Building Load/Information

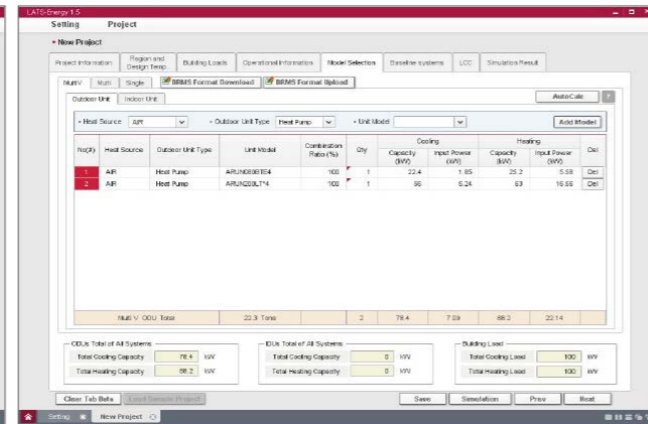
# LATS ENERGY TOOL



## Input – Operating Schedule/Model Selection

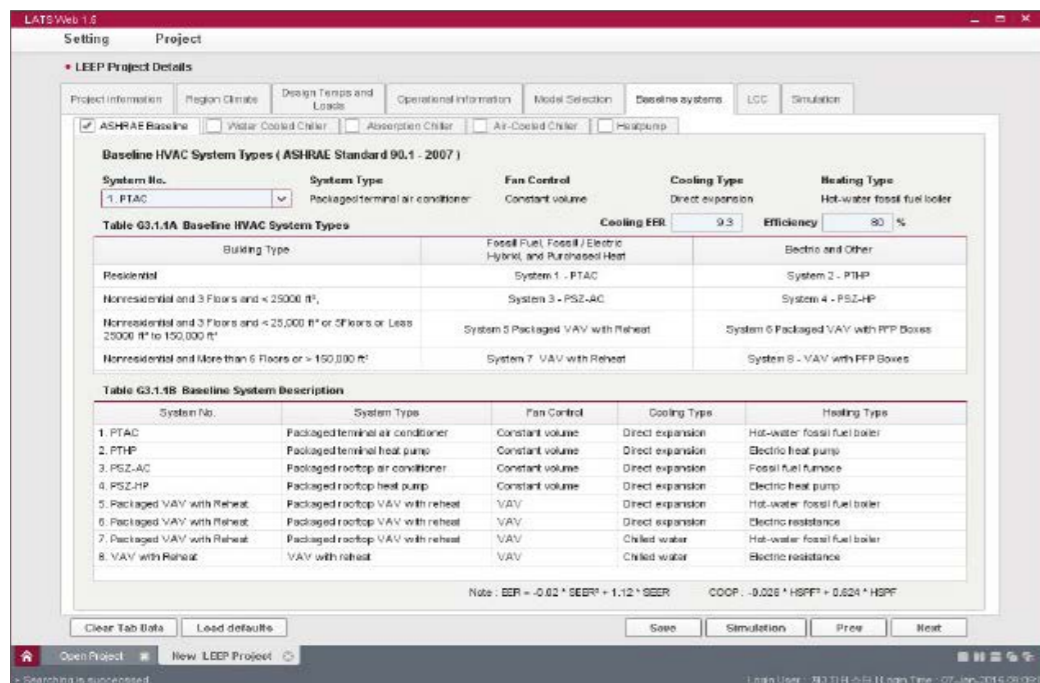


Operating Schedule

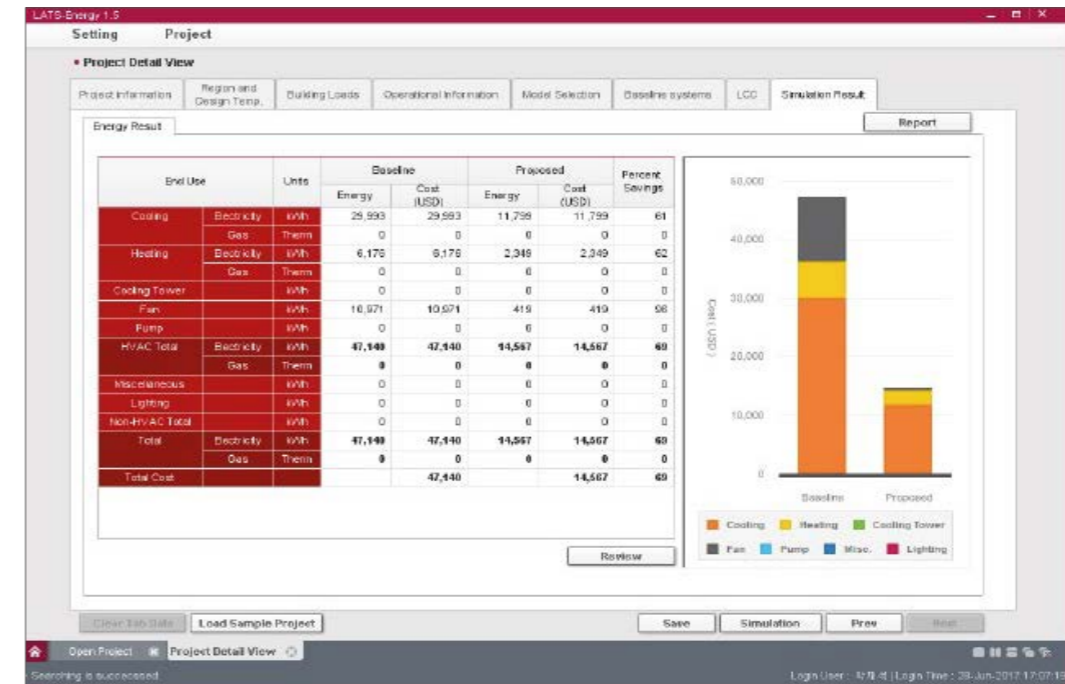


Model Selection

## Input – Baseline System for Comparison



## Simulation Results

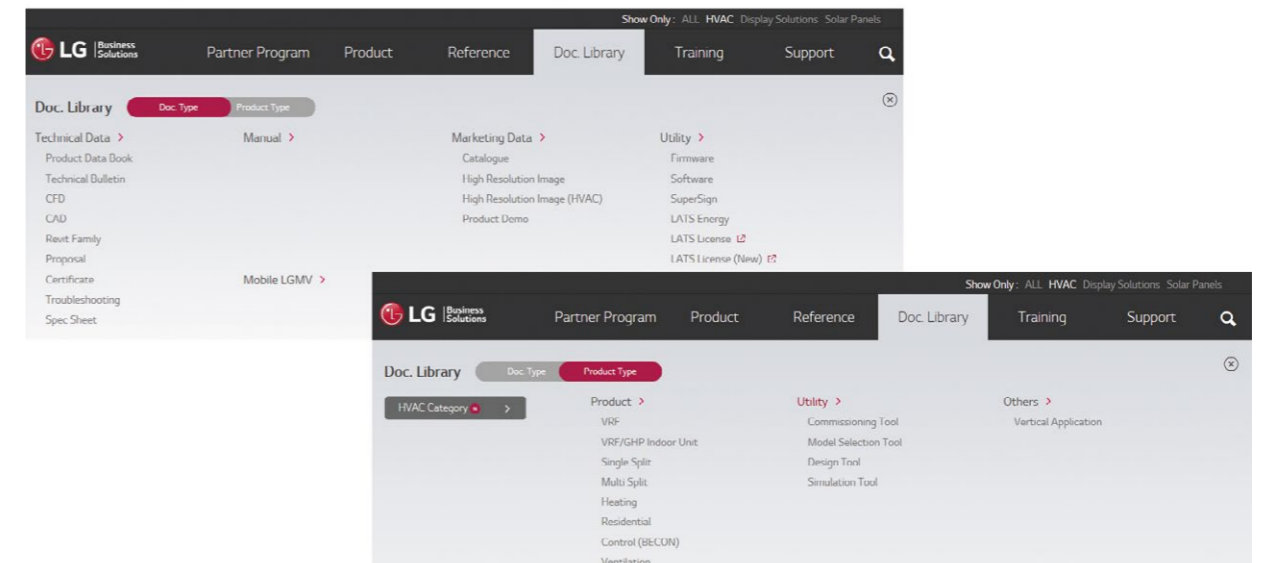


## How Can You Use this Programs?

LATS Energy is available for LG Employee and partner members such as applied rep., distributor, etc. Partner members need to request authorization to use. It is a web-based tool, so users need to sign in / log in the B2B partner portal global web site.

<http://partner.lge.com/global> >

Doc. Library > Doc. Type > Utility > LATS Energy > Product Type > Simulation Tool



\*At present LATS Energy is available in only B2B partner portal global web site.

# LATS REVIT 3D DRAWING TOOL



## What is Revit?

Revit is one of the Commercial programs for BIM (Building Information Modeling)

Ensured design quality through improved design errors deduced by using 3D Modeling, increased accuracy through building information and increased work efficiency through design automation

BIM

Revit : Tool

Revit Family : Source

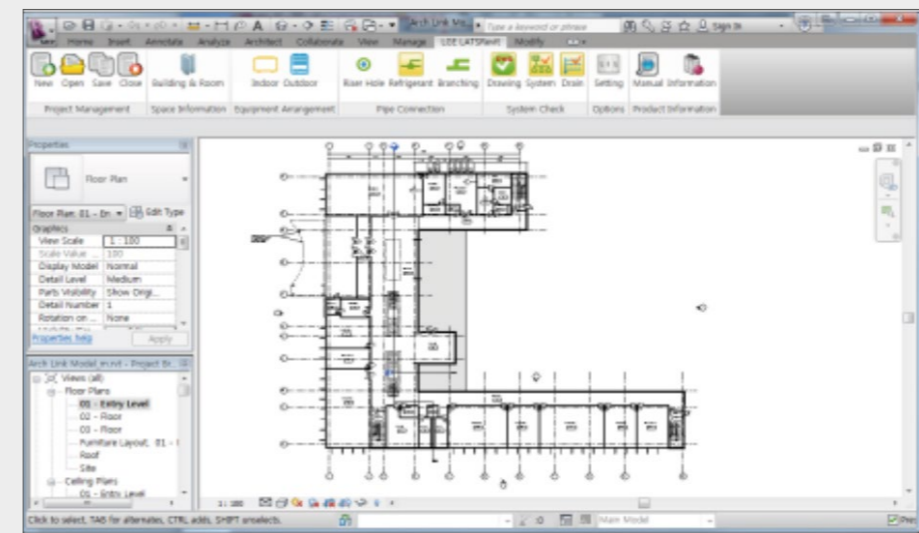
Autodesk Revit :  
BIM Universal programs



LATS Revit (Add-on PGMs on Autodesk Revit) :  
Use the **LG air conditioning Family** in the BIM environment

#ParamGroup	#ParamName	Common	Text	NO	LRF-N2000V	LRF-N2500V	LRF-N3000V	LRF-N4000V
Identity Data	Model name	Common	Text	NO	LRF-N2000V	LRF-N2500V	LRF-N3000V	LRF-N4000V
Identity Data	Independent Unit	Common	Text	NO	LRF-N2000V	LRF-N2500V	LRF-N3000V	LRF-N4000V
Identity Data	Type	Common	Text	NO	LRF-N2000V	LRF-N2500V	LRF-N3000V	LRF-N4000V
Identity Data	A/S Center Phone Number	Common	Text	NO	1544-7777	1544-7777	1544-7777	1544-7777
Identity Data	Compliment Department Phone Number	Common	Text	NO	080-022-7777	080-022-7777	080-022-7777	080-022-7777
Identity Data	A/S URL	Common	Text	NO	http://www.lg.com	http://www.lg.com	http://www.lg.com	http://www.lg.com
Identity Data	Free Content Downloads	Common	Text	NO	http://www.lg.com	http://www.lg.com	http://www.lg.com	http://www.lg.com
Dimensions	Connection Liquid Pipes (mm)	Common	Text	NO	6.5	6.5	1.2	1.2

Revit Family



LATS Revit Program

\* LATS Revit program is currently on development.



# LATS REVIT 3D DRAWING TOOL



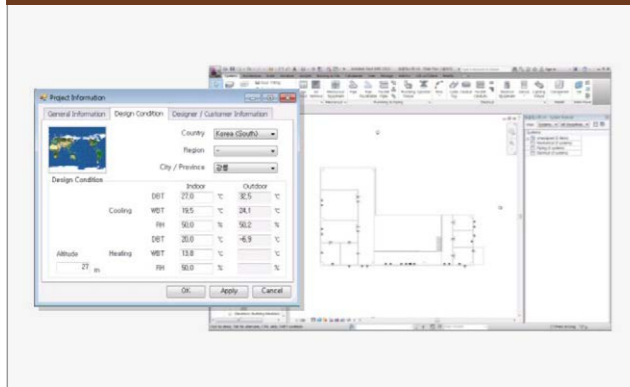
## LATS Revit Features

LATS Revit has specially adapted feature to LG HVAC products.

### Support Range

Design for LG air conditioner, refrigerant piping, drain piping, control solution generate the equipment schedules

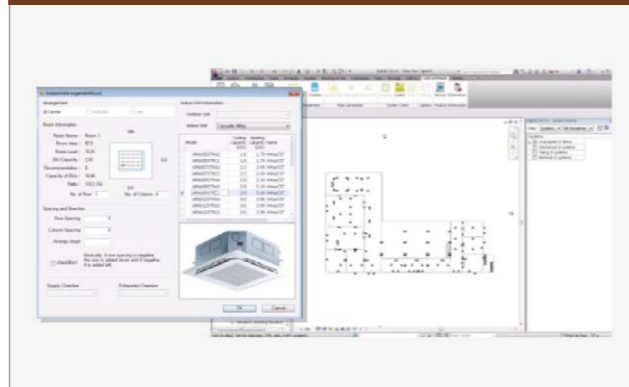
#### AUTOMATIC ASSIGNMENT



#### 01 Automatic Assignment

After calculating room load, assign the indoor unit automatically

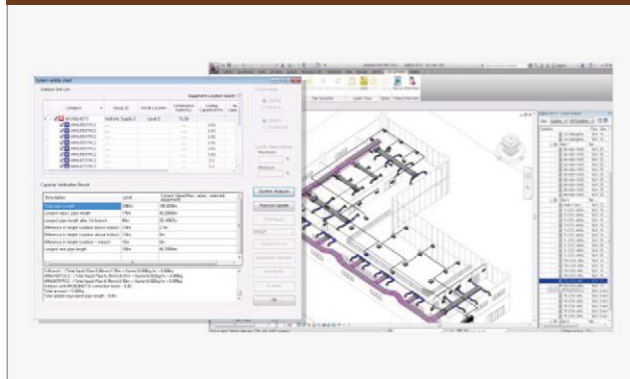
#### AUTOMATIC PIPING



#### 02 Automatic Piping

Connect ODU and IDU's to the pipe by a few steps (LATS Revit suggests a kind of connection for user selection)

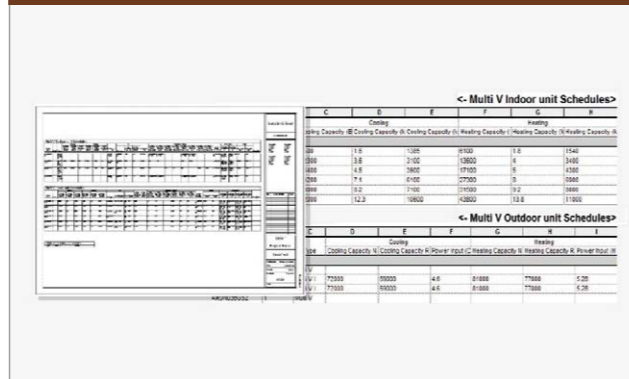
#### SYSTEM CHECK (VALID TEST)



#### 03 System Check (Valid Test)

Verify your system design with System Check function (If you have a wrong design, the LATS Revit shows you that for your correction)

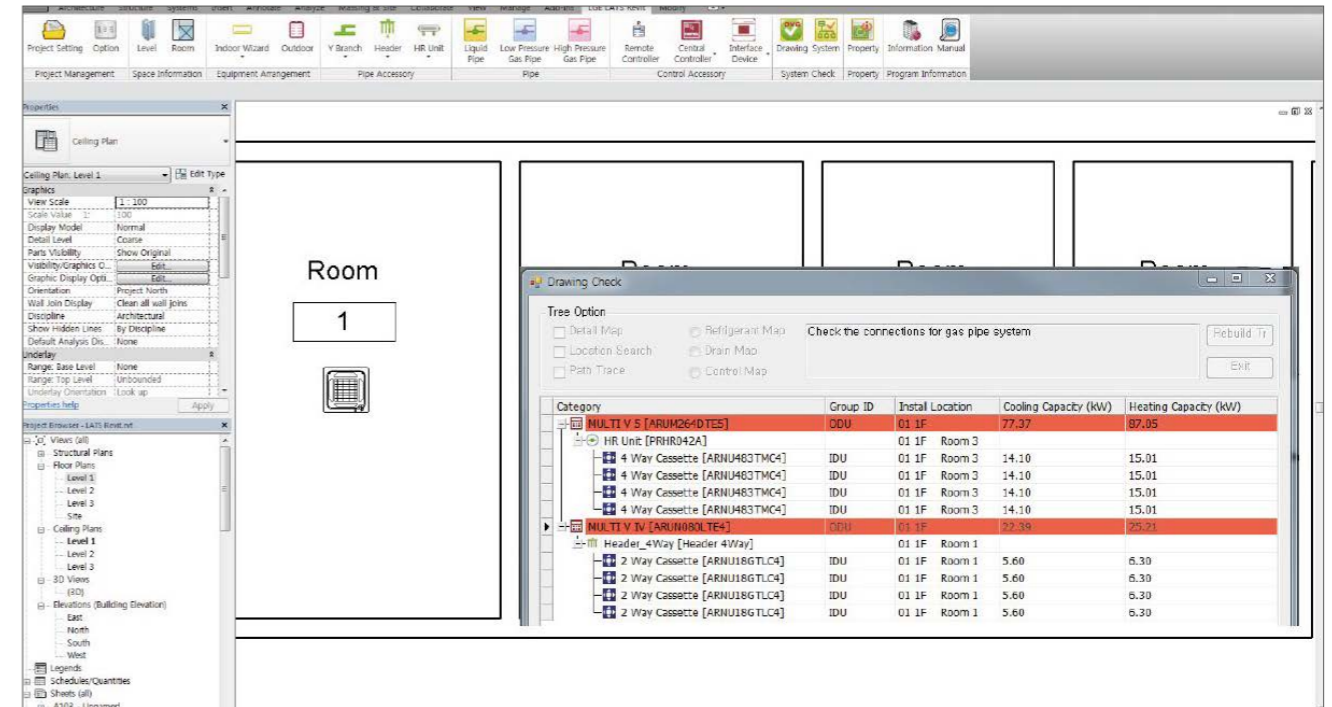
#### SCHEDULE GENERATION



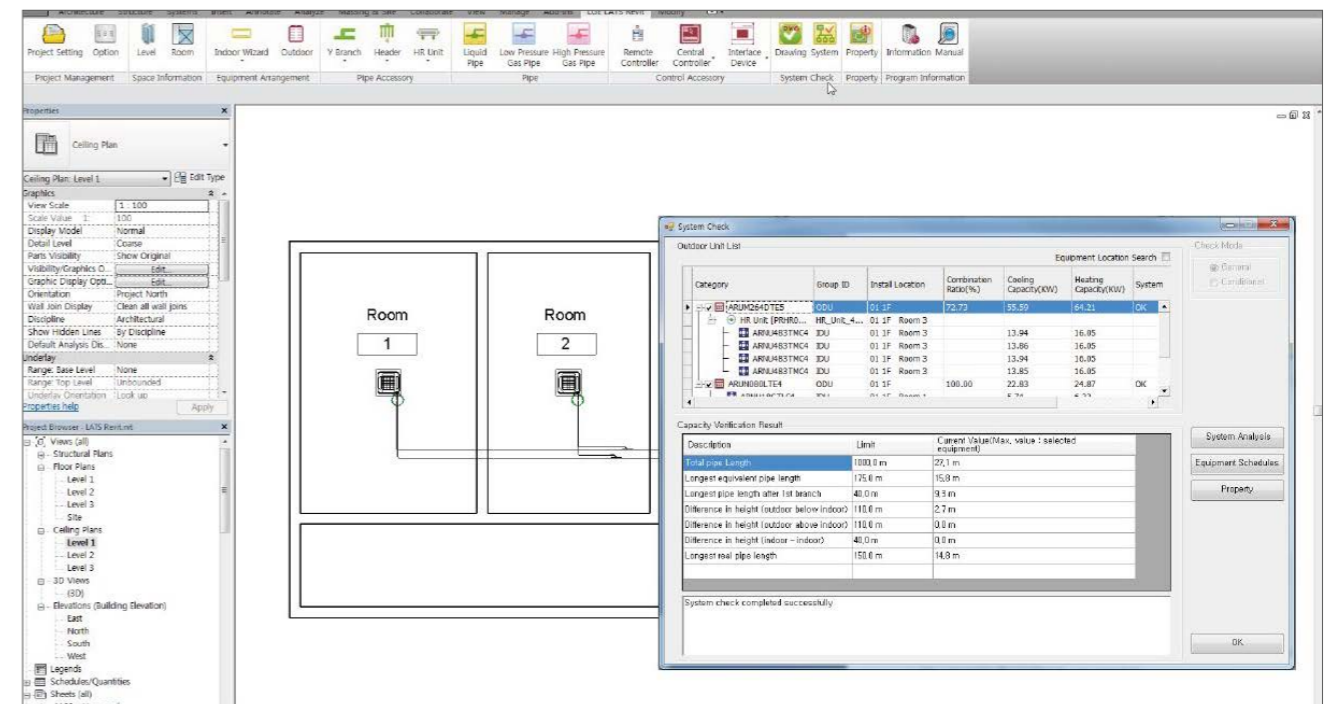
#### 04 Schedule Generation

The schedules have some useful information for you and your clients like system capacity estimation and quotation draft.

## Auto Pipe Sizing & Branch Selection



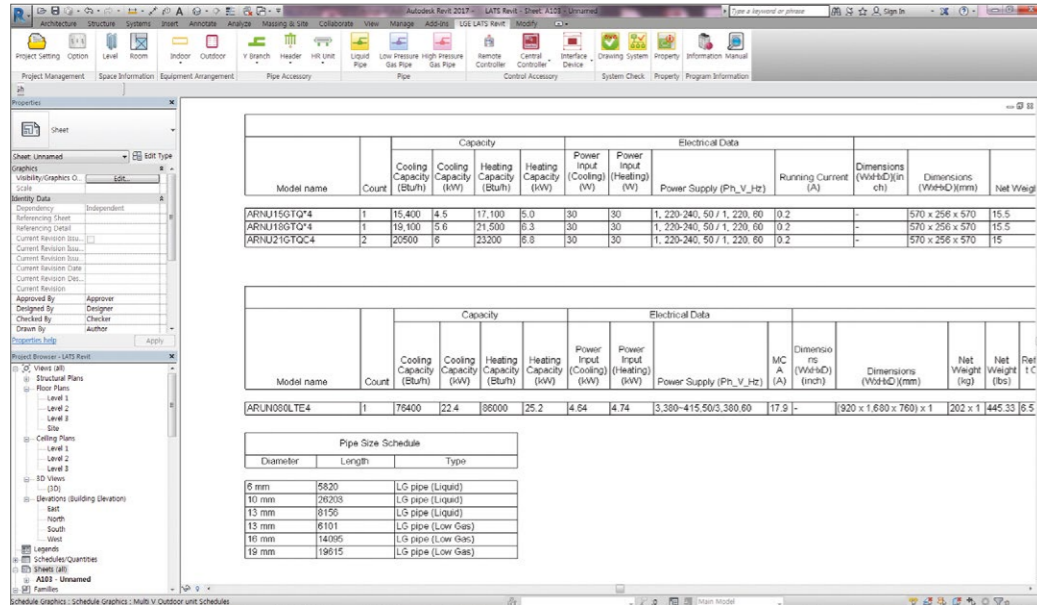
## Check System Design



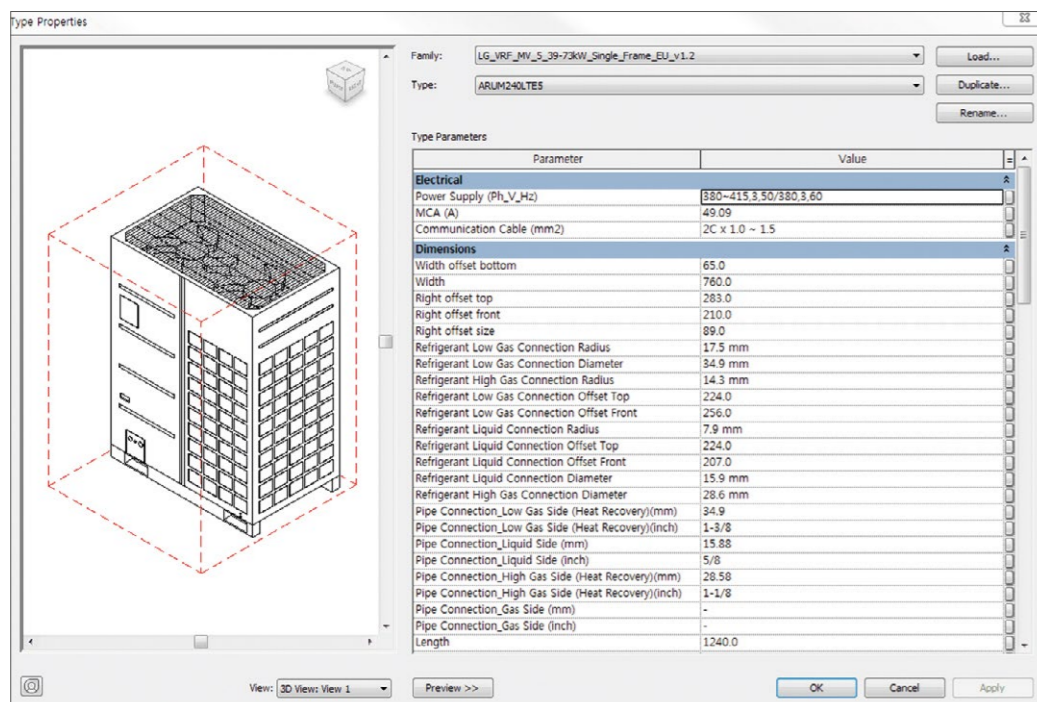
# LATS REVIT 3D DRAWING TOOL



## Auto Equipment Schedule



## Provision Revit Family

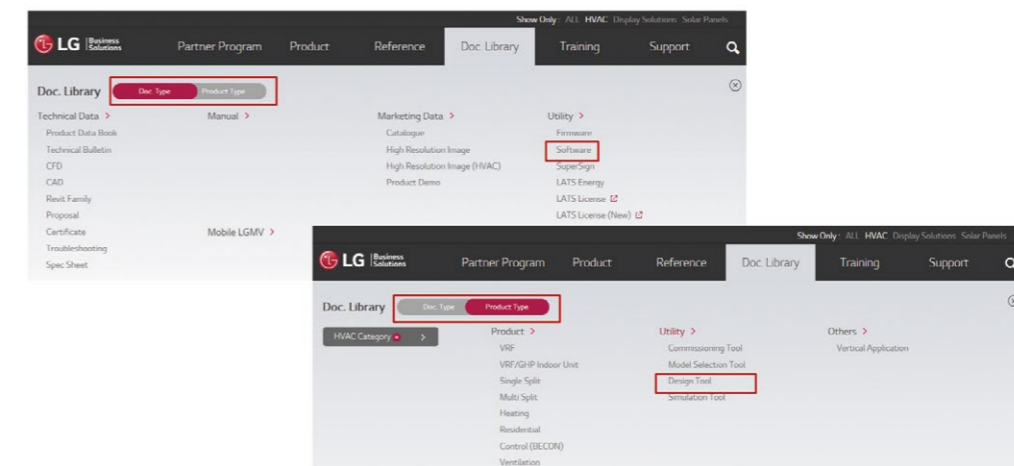


## How to Download?

You can download LATS Revit from the B2B partner portal. In the following location, select the right version of LATS Revit that meets the specifications of your PC.

<http://partner.lge.com/> >

Select Location > Doc. Library > Doc. Type > Utility > **Software**  
> Product Type > **Design Tool**

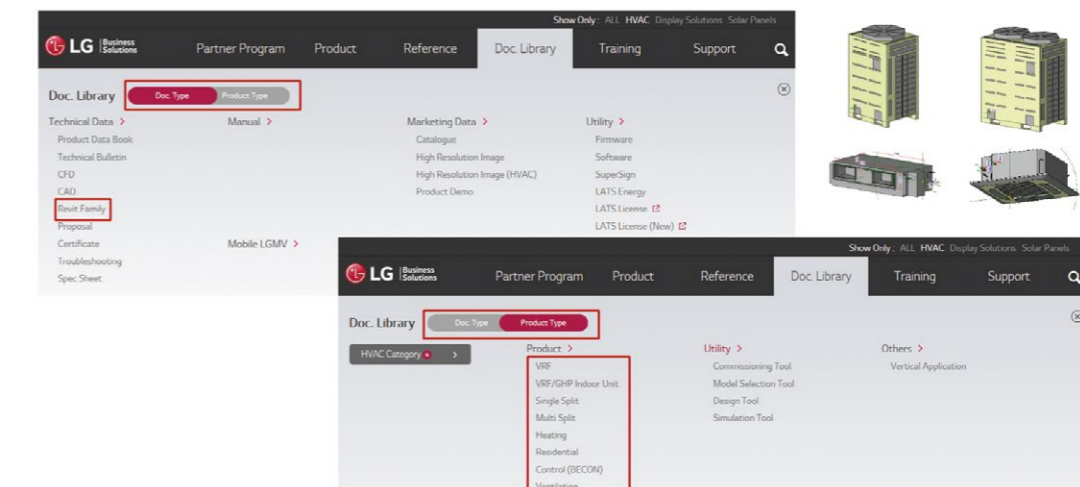


## How to Download Revit Family?

You can download Revit Family from the B2B partner portal. In the following location, select the right version of LATS Revit that meets the specifications of your PC.

<http://partner.lge.com/> >

Select Location > Doc. Library > Doc. Type > Technical Data > **Revit Family**  
> Product Type > Select Product > **Revit Family**

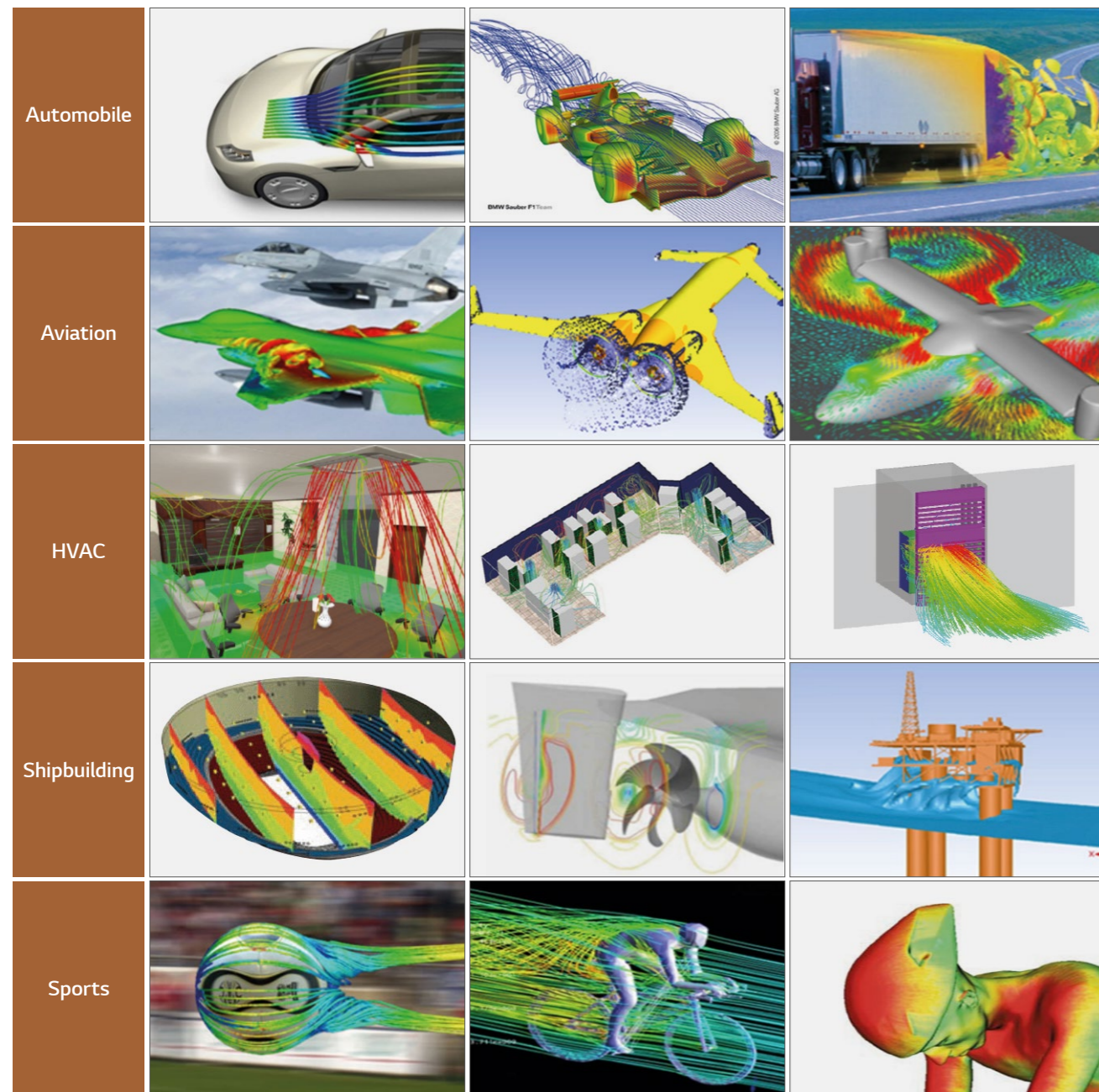




## Computational Fluid Dynamics

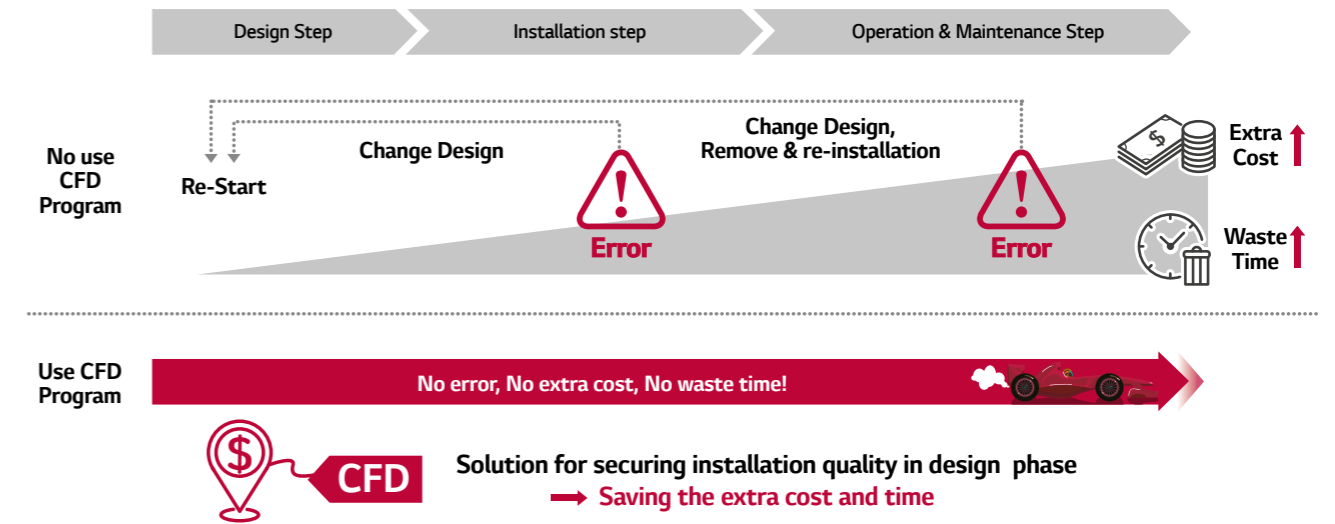
### CFD Introduction

CFD is being practically used in various industries, and it is being considered as an integral item for the development of products and their applications.

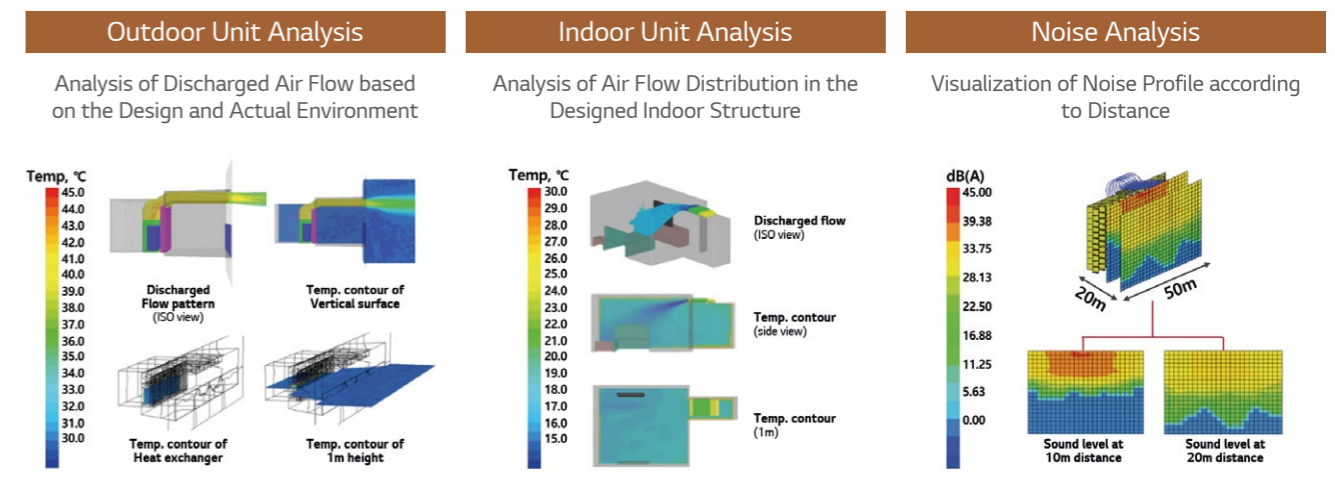


## CFD Introduction

Airflow analysis through the CFD can be utilized at all steps from business kick-off phase to maintenance phase. Especially, It is possible to secure quality design step through the optimal / differentiative.



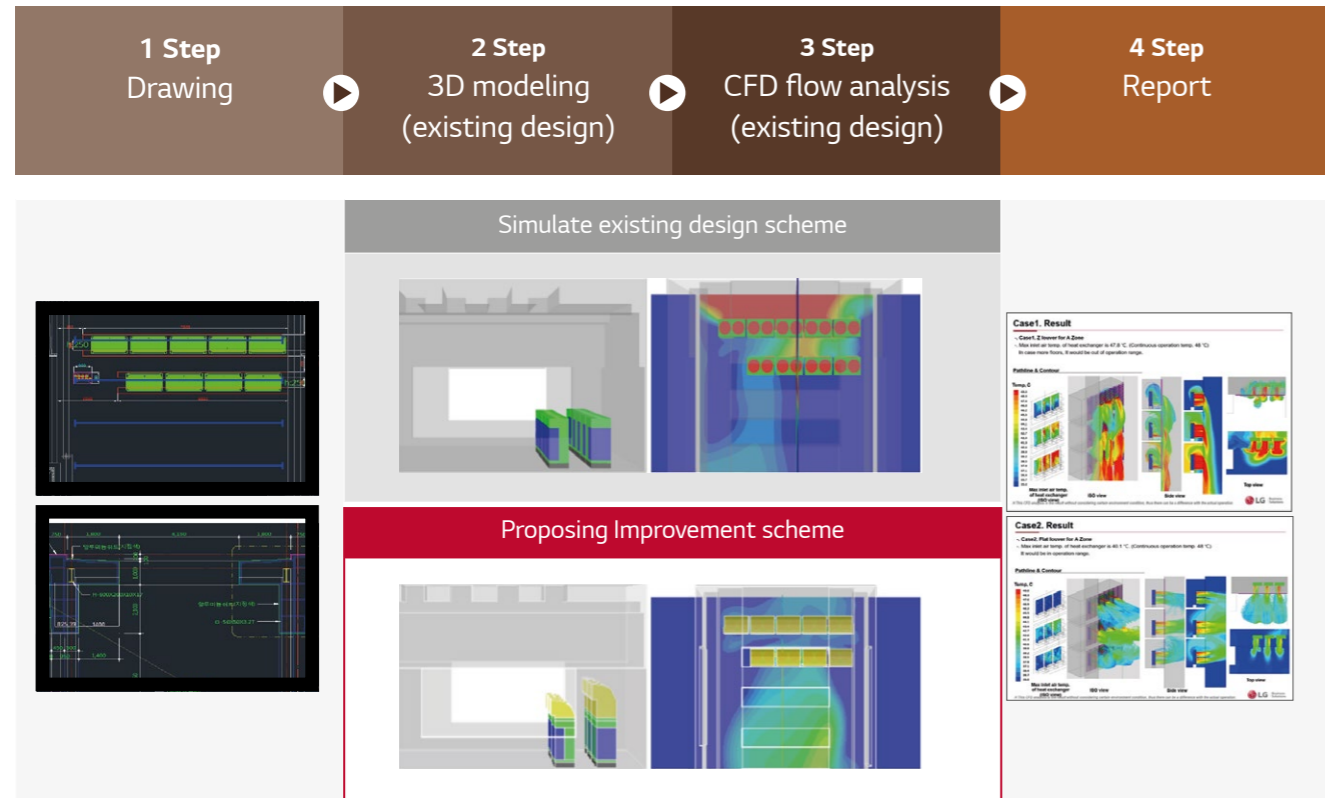
Engineering team of HQ offers three kinds of CFDs. (Outdoor Unit Analysis, Indoor Unit Analysis, Noise Analysis)





## CFD Analysis Work Flow

From checking the project information to reporting, it consists of 4 steps.

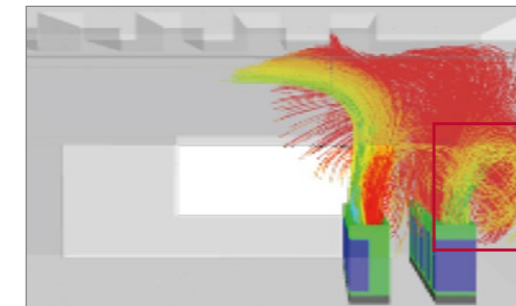
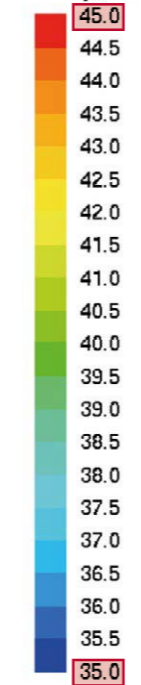


## How to Understand CFD Analysis

1. Check if there is recirculation (short cycling) or not.
2. Blue color is good condition / Red color is bad condition.

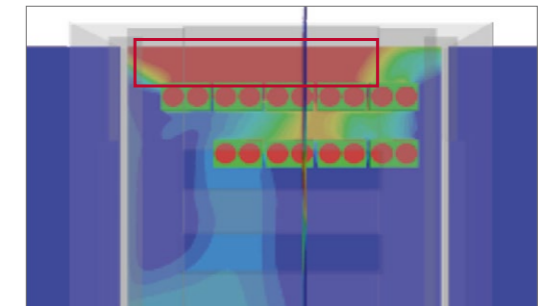
45 means limit operation range

Temp, °C



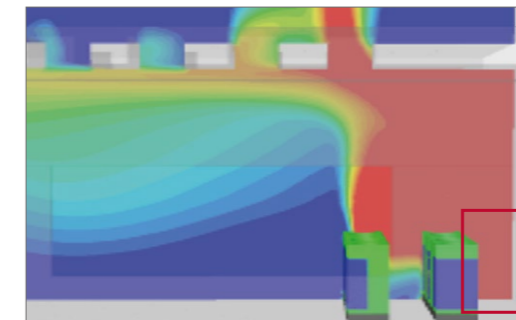
**01 Discharge flow pattern (Side View)**

look at the discharge flow pattern. You have to show whether the discharge air enters the heat exchanger or not. (Short cycling occurs in this site.)



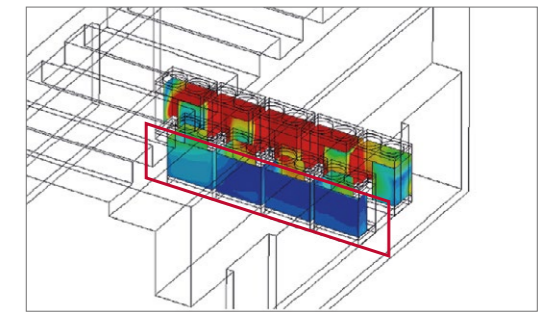
**02 Section temp. contour (Z=1 m, Top View)**

When you see the red color, it means that power consumption can be increased and the performance of the product can be decreased.



**03 Section temp. contour (Side View)**

When you see the contours, you have to check the color around the heat exchanger.



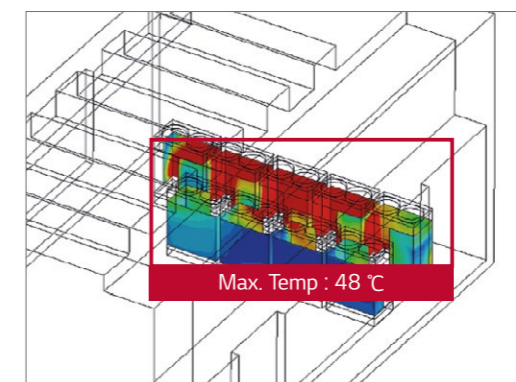
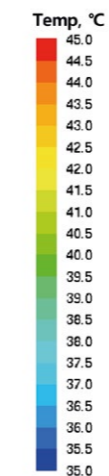
**04 Inlet air temp. of heat exchanger (ISO View)**

When you see the blue color, it means there is no recirculation.

Temperature 35 mean outdoor air temperature.

Approximate capacity verification is possible through the inlet air temp. of heat exchanger.

Ex) Assume the inlet air temp. of heat exchanger is 48 °C.  
If max inlet air temp. of heat exchanger is 48 °C, Total capacity will be decreased by 27%.



**Inlet air temp. of heat exchanger (ISO View)**

Combination (%)	Outdoor air temp. (DB, °C)	Indoor air temp. (DB/°C)			
		26 18		27 19	
		TC	PI	TC	PI
100	10	52.4	5.49	54.0	5.93
	12	52.4	5.67	54.0	6.09
	14	52.4	5.91	54.0	6.35
	16	52.4	6.16	54.0	6.65
	18	52.4	6.40	54.0	6.98
	20	52.4	6.77	54.0	7.47
	21	52.4	7.01	54.0	7.73
	23	52.4	7.52	54.0	8.29
	25	52.4	8.04	54.0	8.88
	27	52.4	8.60	54.0	9.48
	29	52.4	9.18	54.0	10.14
	31	52.4	9.79	54.0	10.82
	33	52.4	10.44	54.0	11.54
	35	52.4	11.12	54.0	12.31
	37	52.4	11.78	54.0	12.90
	39	52.4	12.48	56.0	13.77
	41	51.6	13.18	57.0	14.65
43	49.8	13.81	57.5	15.15	
46	46.7	14.65	47.0	15.15	
	48	40.9	40.9	13.06	

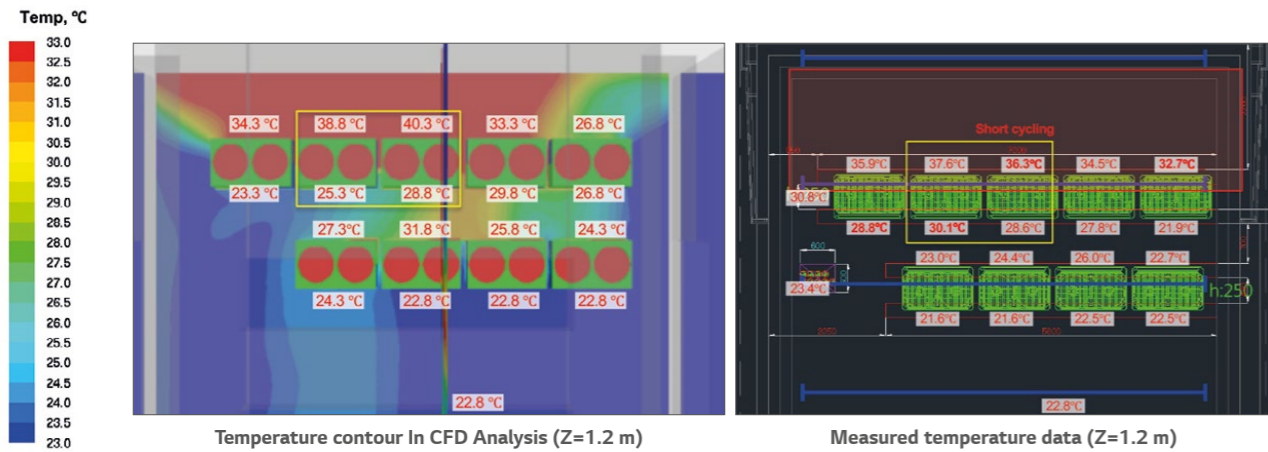
# CFD ANALYSIS



## Comparison Between CFD and Measurement

If appropriate models and boundary conditions are selected, reliable CFD results can be obtained.

- Ex) Product type : MULTI V 5 (9EA, UXB chassis) / Ambient temp. 22.8 °C / Operating ratio : 100%
- In CFD Analysis, Max. inlet air temp. of heat exchanger is 40.3 °C
  - In actual measurement, Max. inlet air temp. of heat exchanger is 37.6 °C
  - > Difference between CFD Analysis and actual measurement is only 2.7 °C



## Global CFD Analysis (8 cases)

You can download the 8 types of CFD analysis case book from the Global B2B Partner Portal

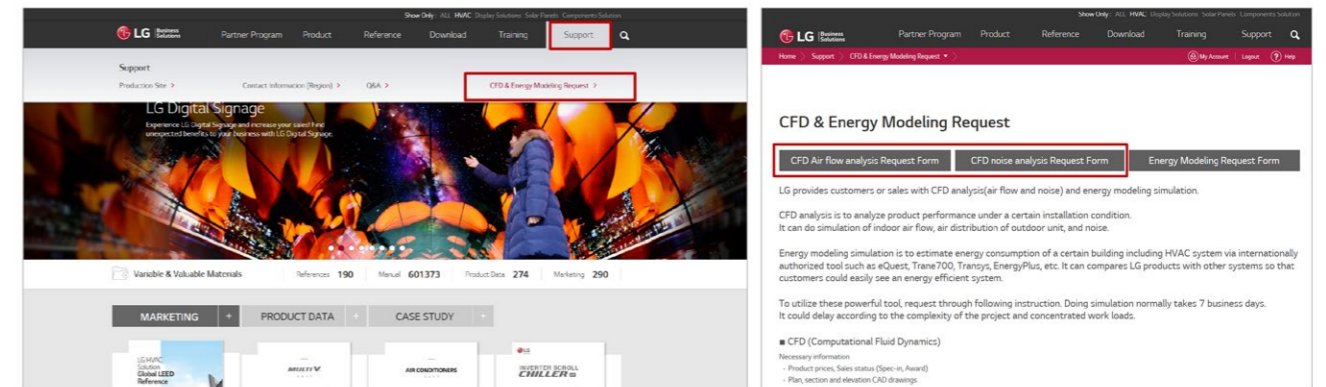
<http://partner.lge.com/global> > Doc.Library > Technical Data > CFD

NO.	1	2	3	4	5	6	7	8
Type	'U'-shaped building	Necessity of air-guide	Additional exhaust fan	Sunken structure	Multiple outdoor units installation	High-rise building	Z-Louver installation	The influence of louver angle
Image								
Definition	ODUs are installed deep inside the building from outer walls.	Air-guides are necessary to achieve smooth discharge flow.	Generally, additional exhaust fan is not recommended.	4-sides of ODU's are blocked with side walls.	Multiple number of ODU's are installed.	Discharge flow from lower floors may recirculate into the upper floor's ODU's.	Louver with Z-shape bend.	Discharge flow depends on the louver angle.
Solutions	1) Relocate the ODU's near outer wall. 2) Make air guide to outer wall	1) Install air guide towards the outside. 2) Discharge area should be larger than fan area	1) Select fan equivalent to ODU's air flow rate. 1) Make sure to operate exhaust fan when ODU's are operated.	1) Install air-guide 2) Install gallery on side wall. 3) Reduce ODU numbers.	1) Make heat exchanger facing away each other. 1) Keep distance between ODU's.	1) Install air-guide. 2) Optimize louver shape. 3) Relocate the ODU's.	1) Remove the Z-louver. 2) Change louver type to Flat louver.	1) Recommended louver angle : 0 - 15 degrees

## Request Process

From the Global B2B Partner Portal (<http://partner.lge.com/global/>), you can download the request form of CFD Analysis (Air flow & Noise) and do a request of CFD analysis.

<http://partner.lge.com/global> > Support > CFD & Energy Modeling Request



## Request Form

### Request Step

1. Download the request form
2. Fill in the form
3. Send request via following email address

Email : [ae-cfd@lge.com](mailto:ae-cfd@lge.com)

### Necessary information

- Product prices, Sales status (Spec-in, Award)
- Plan, section and elevation CAD drawings
- Louver specification and Ambient temperature.
- Product specification (Model name, chassis)
- CAD file is necessary

#### 000000 PJT CFD Analysis Request (Overseas)

**Requestor**  
Subsidiary: LGE00 Name: 000 Opp. No: 000000000

**Project information**  
1. Amount (Product): 00 MS  
2. Sales state: Spec-in or Award  
3. Analysis type: ODU analysis or IDU Analysis  
4. Base model name (chassis): ARUN200LT64x5ea (LUX3 chassis x 5ea)  
5. Major issue: Rooftop group installation issue or 3F or 4F room installation issue

==== After fill out the request form, please send it to the following address =====  
Send to: [ae-cfd@lge.com](mailto:ae-cfd@lge.com)

**Essential CAD files**  
Essential Data  
ODU Analysis - Plan view, Section view, Elevation view, Equipment schedule, Louver drawing  
IDU Analysis - Plan view, Section view, Elevation view, Equipment schedule, Louver drawing, Diffuser size and type

#### 000000000 PJT Noise Request (Global)

**Requestor**  
Subsidiary: LGE00 Name: 000 Site Address: Opp. No: 000000000

**Required fields**  
1. Amount (Product): 00 MSS  
2. Sales state: Spec-in or Award  
3. AC type (ODU / IDU)  
4. Major issue

==== After fill out the request form, please send it to the following address =====  
Send to: [ae-cfd@lge.com](mailto:ae-cfd@lge.com)

**Required attachments**  
Request noise analysis - Building size information (W x H x D) with product installed. And building size information about which noise issue is likely to occur.  
- Building scale Reply method : Drawings, actual photographs, Internet street view, etc.

**Example for drawing**

# CFD ANALYSIS



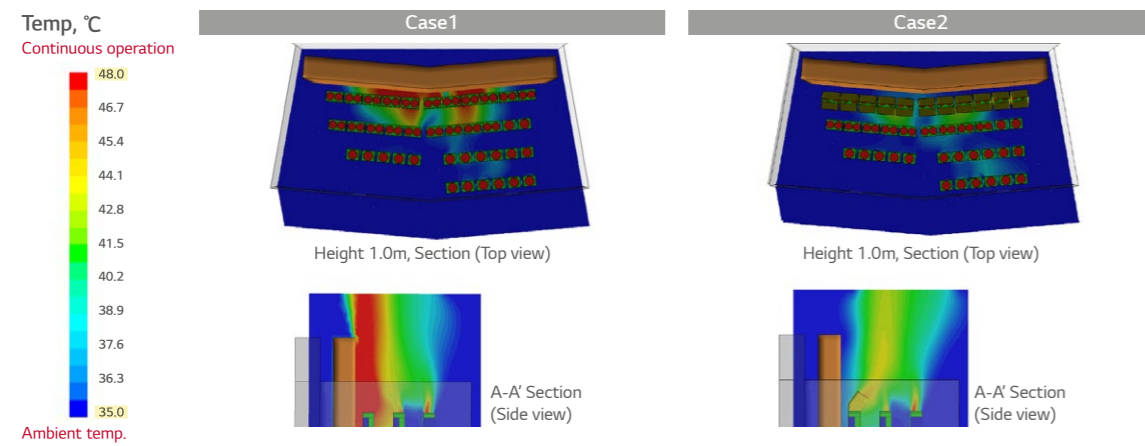
## Outdoor Unit Analysis

### Project Scope

Outdoor units installation space on the rooftop was surrounded by the 4m height wall. There are also 3 openings 1m high in the front and 7m high billboard behind.

### Summary

Because of outdoor unit group installation, Inlet air temp. of heat exchanger of outdoor unit in the middle is expected to exceed operation range. Therefore, discharge air guide was installed like Case2. As a result it made the outdoor unit to absorb fresh outside air.



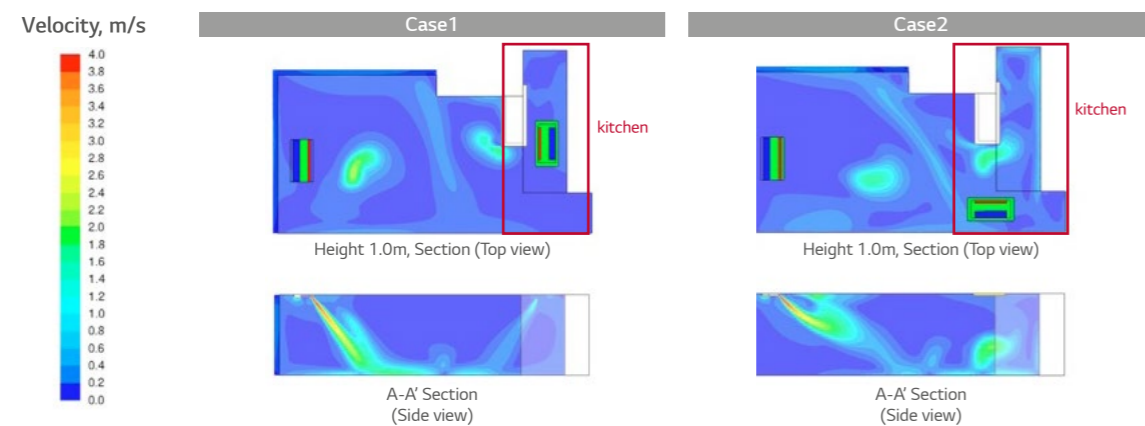
## Indoor Unit Analysis

### Project Scope

This is a project to determine the location of indoor units in the kitchen. The CFD analysis was conducted, and LG advanced the opinion on the optimal location to this project.

### Summary

Looking at the velocity distribution, Case2 showed better results than Case1 in the kitchen. Case2 shows a more even airflow distribution in the floor including the kitchen compared to Case1.



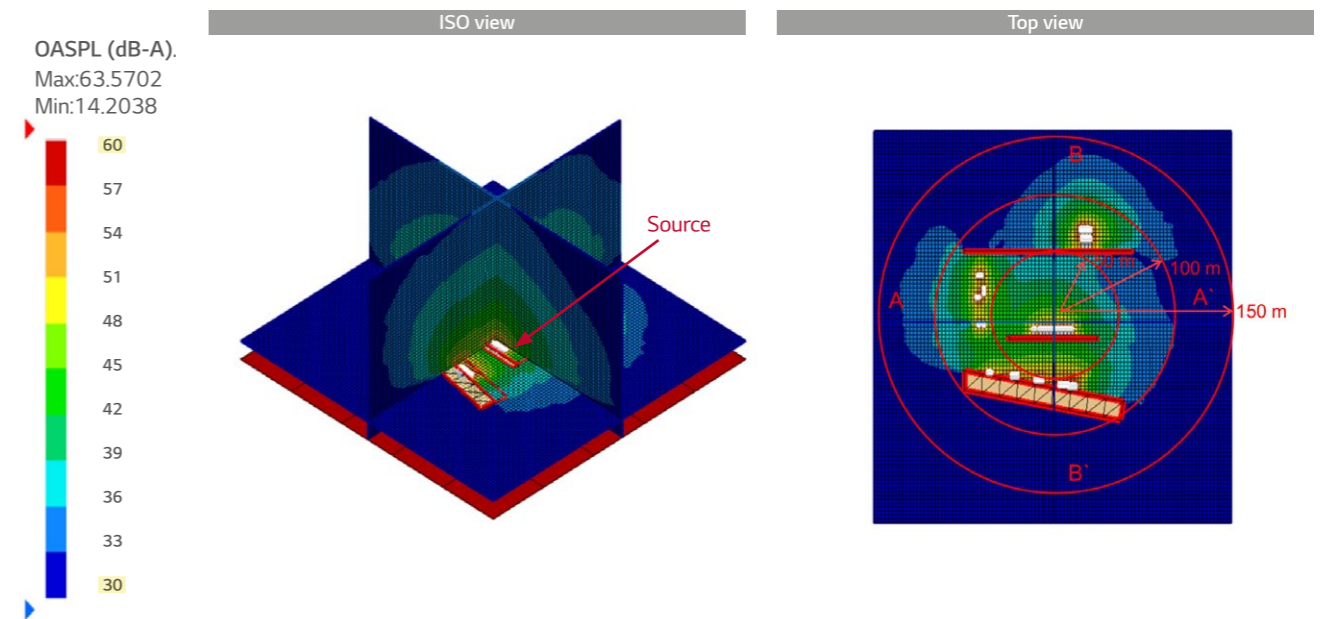
## Noise Analysis

### Project Scope

The outdoor unit is installed on the roof of four buildings, and the noise distribution at a distance of about 150m was analyzed.

### Summary

The noise value at a distance of 150m due to the installation of the outdoor unit is seen to be about 32-35dB, and it is expected that there will be little effect of the noise caused by the outdoor unit.



# ENERGY MODELING SIMULATION



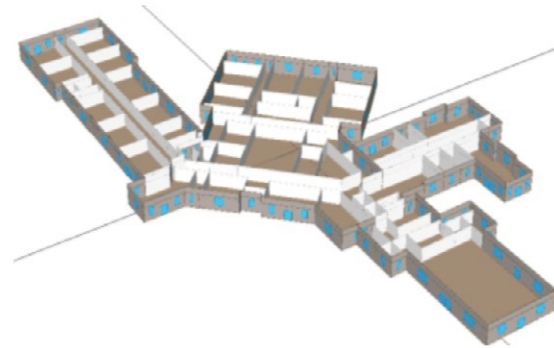
## Energy Modeling Simulation

Energy Modeling Simulation is widely used for estimation of energy usage, certification such as LEED, BREEAM, etc., and design guide of new buildings as well as existing buildings for energy improvements.

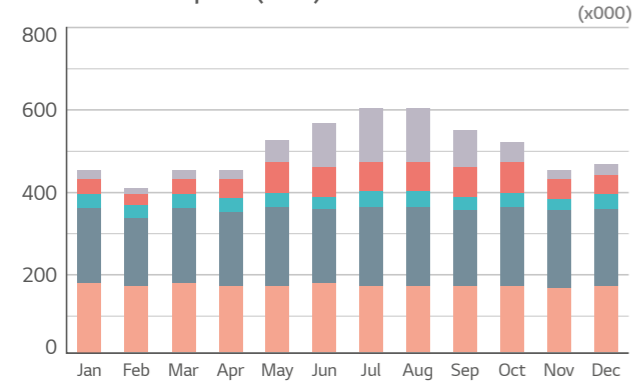
### Energy Modeling Simulation uses globally Certified Program

(such as eQuest, Trane700, EnergyPlus, etc.)

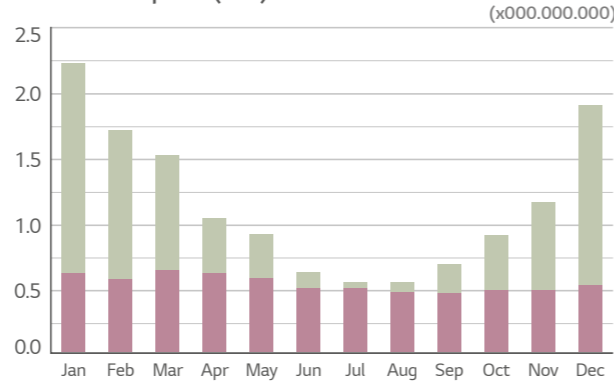
- Computer based tools
- Simulates annual energy usage of a building
- Methodical and iterative process to evaluate potential decisions and achieve long-term goals
- Various design considerations prior to the construction phase



Electric Consumption (kWh)



Gas Consumption (Btu)



- Area Lighting
- Pumps & Aux.
- Space Heating
- Task Lighting
- Ventilation Fans
- Refrigeration
- Misc. Equipment
- Water Heating
- Heat Rejection
- Exterior Usage
- Ht Pump Supp.
- Space Cooling

Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	17.8	16.1	19.0	21.0	51.4	98.7	131.8	124.6	75.9	35.4	19.7	17.8	629.2
Heat Reject.	-	-	-	0.0	0.5	2.7	4.6	4.3	1.4	0.1	0.1	-	13.7
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	46.2	41.7	47.5	59.0	74.9	72.5	73.2	74.8	75.9	68.6	49.1	46.3	729.7
Pumps & Aux.	33.2	30.0	33.3	32.5	35.4	37.3	40.2	39.8	36.0	34.6	32.3	33.2	417.7
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	183.4	165.7	183.4	177.5	183.4	177.5	183.4	183.4	177.5	183.4	177.5	183.4	2,159.6
Task Lighting	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lighting	173.1	156.3	173.1	167.5	173.1	167.5	173.1	173.1	167.5	173.1	167.5	173.1	2,038.0
<b>Total</b>	<b>453.7</b>	<b>409.8</b>	<b>456.3</b>	<b>457.5</b>	<b>518.8</b>	<b>556.1</b>	<b>606.3</b>	<b>600.0</b>	<b>534.2</b>	<b>495.3</b>	<b>466.1</b>	<b>453.8</b>	<b>5,987.8</b>

## Who Uses Building Energy Modeling and Why?

Energy Modeling Simulation allows users, such as engineering firms, to access HVAC system efficiency and adjust building's features to meet the needs of owners and occupants while reducing energy bills.



### 01 CERTIFICATION

LEED EA Credit 1 : Baseline model per ASHRAE 90.1 App. G and Proposed model per final construction Documents



### 02 FINANCIAL

Prioritize investment strategies.



### 03 EXPLORATION

Investigate new/ alternative design strategies.



### 04 OPTIMIZATION

Inform the design and decision making process.



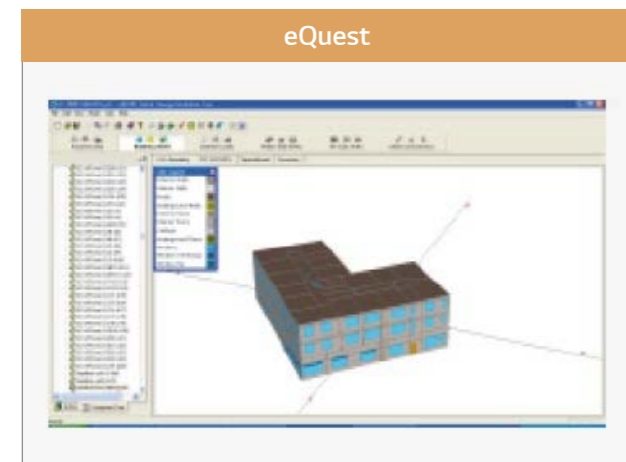
# ENERGY MODELING SIMULATION



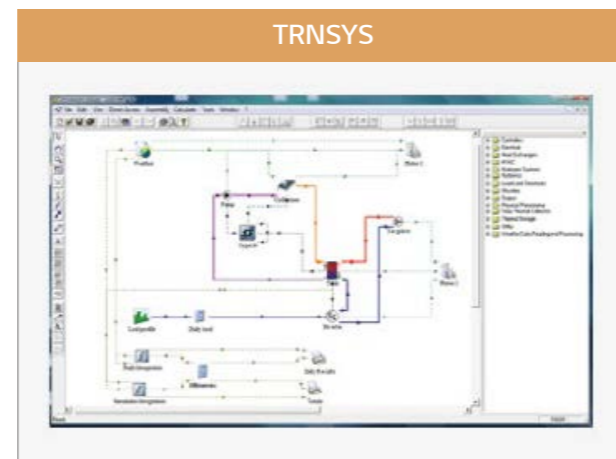
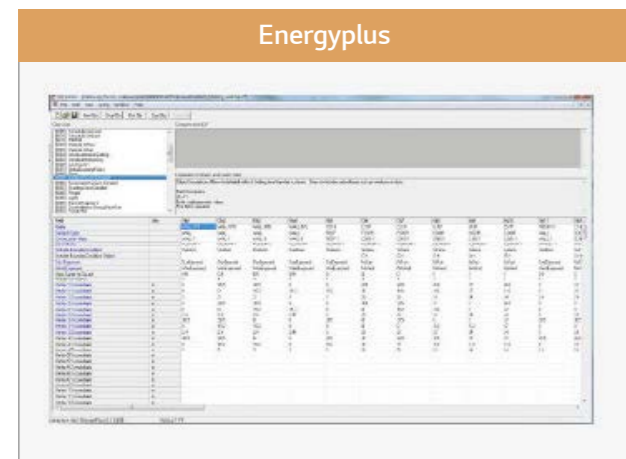
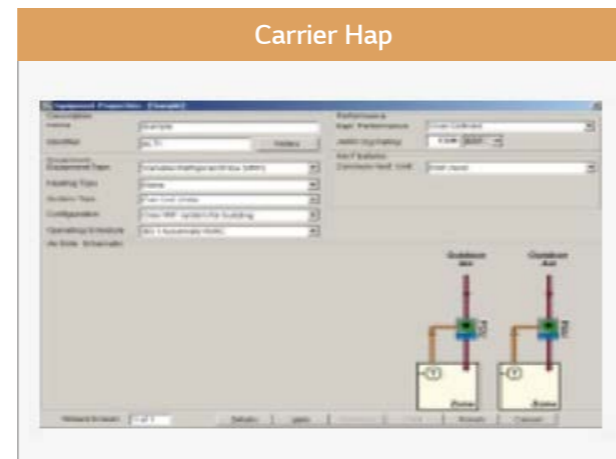
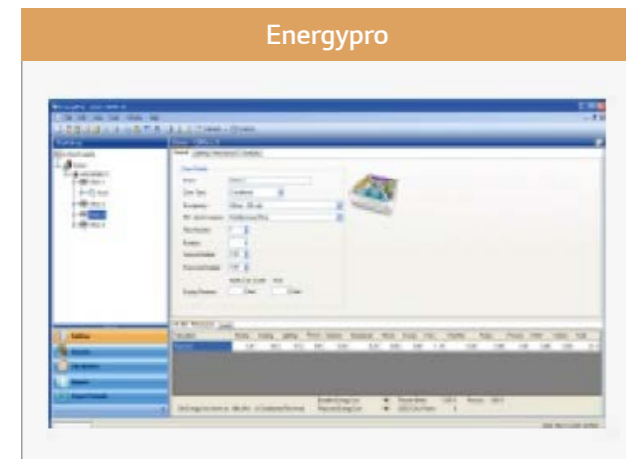
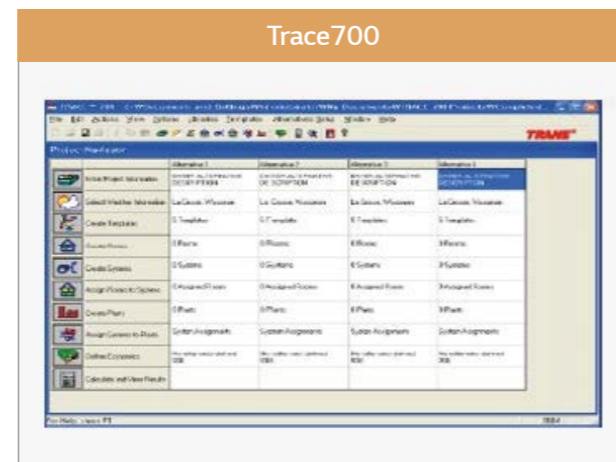
## Software for Energy Modeling

There are various types of energy modeling software by DOE-21) based tools or other's. Plus, each tool has particular function and feature.

**DOE-2 based tools :** eQuest, EnergyPro, EnergyPlus



**Other :** Trace700, Carrier HAP, TRNSYS, ISE-VE, ESP-r



## Software for Energy Modeling

### Sample PJT

The building is a 6,300m<sup>2</sup>(68,000ft<sup>2</sup>) and 4-floor residential facility. As the replacement of the originally designed PTAC(Packaged Terminal Air Conditioner) and the electric heater, the high efficiency air-cooled VRF system has been proposed in consideration of comfort of the area and user's convenience. Also, verification work has been requested for energy consumption reduction effect during actual utilization of the building.

6,300m<sup>2</sup>(68,000ft<sup>2</sup>), 4-floor residential facility



Original Design  
(PTAC & Electric Heater)



LG Proposed Design  
(Air Cooled VRF)

### Sample PJT

The results confirmed that annual energy consumption reduction provided by the air-cooled VRF system is approximately 53.4%, and the result delivered to customer.

#### Modeling Image

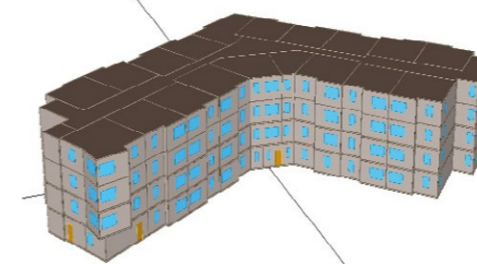
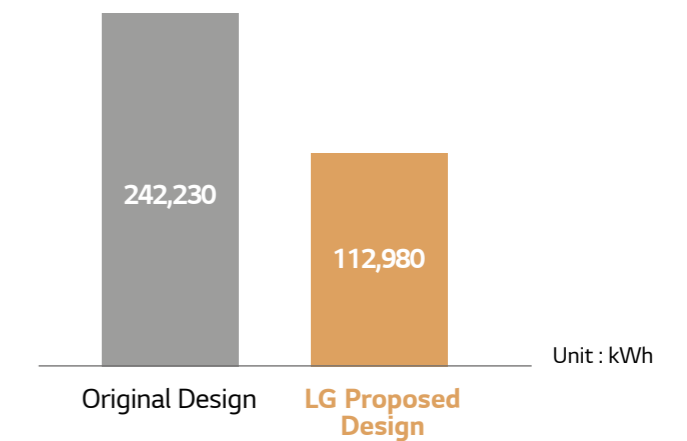


Image of Building Energy Modeling  
(eQUEST version 3.65)

#### Simulation Result Summary



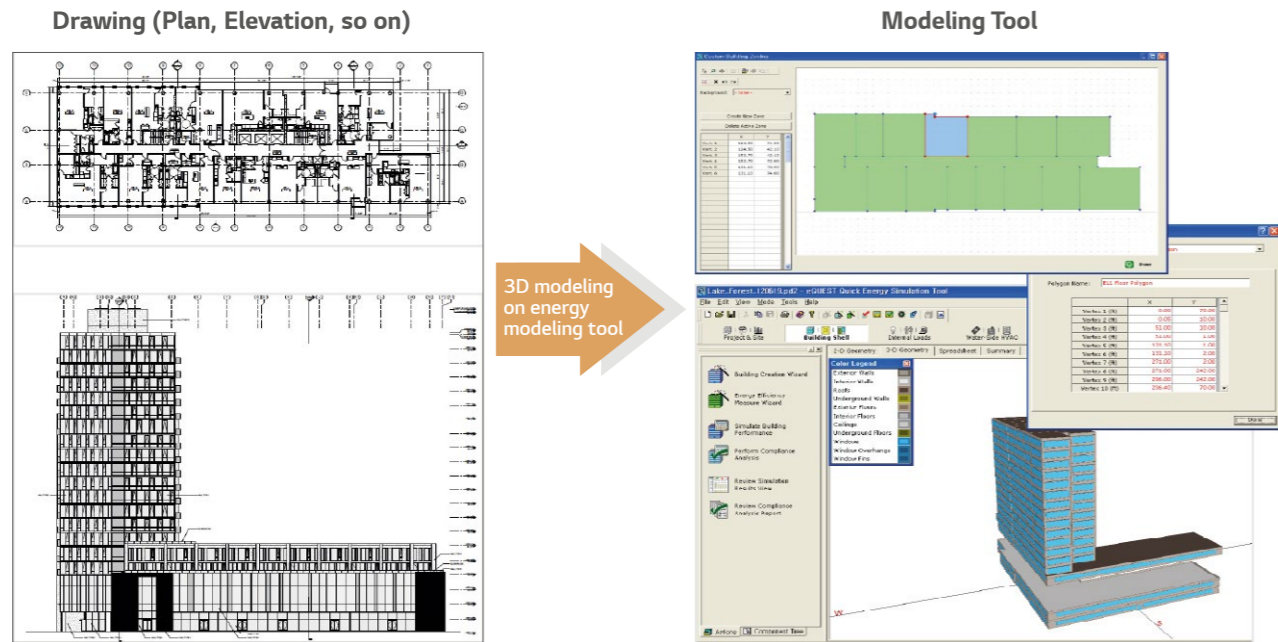


# ENERGY MODELING SIMULATION

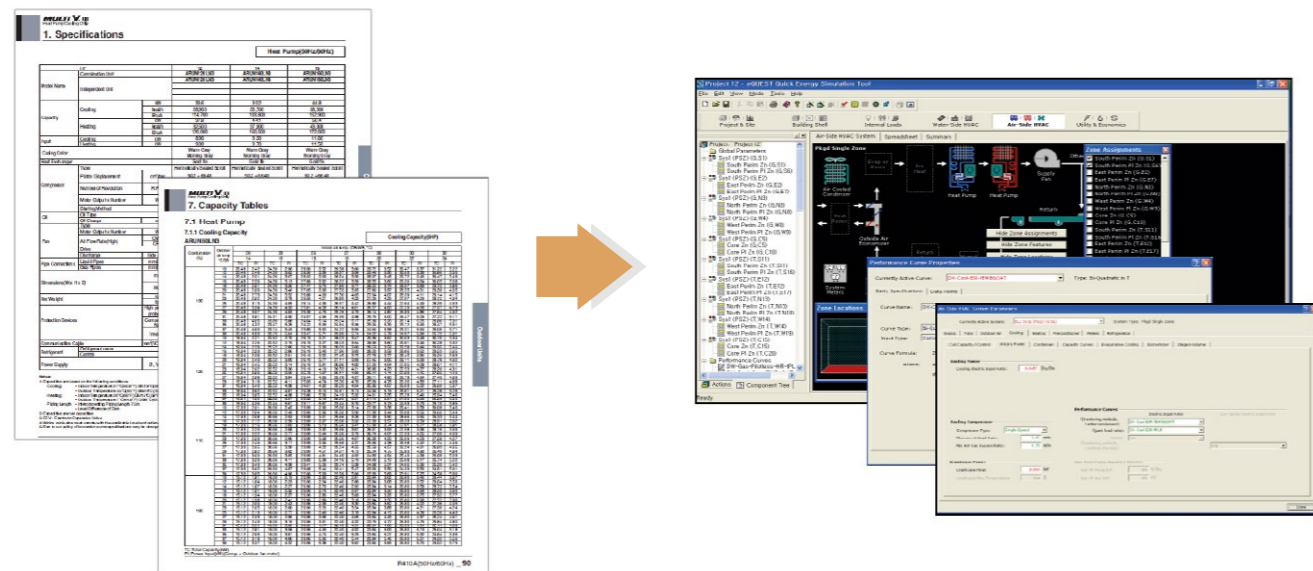


## Energy Modeling Simulation

First, 3D building model is made for energy simulation on energy modeling tool with drawing file (plan, elevation so on)



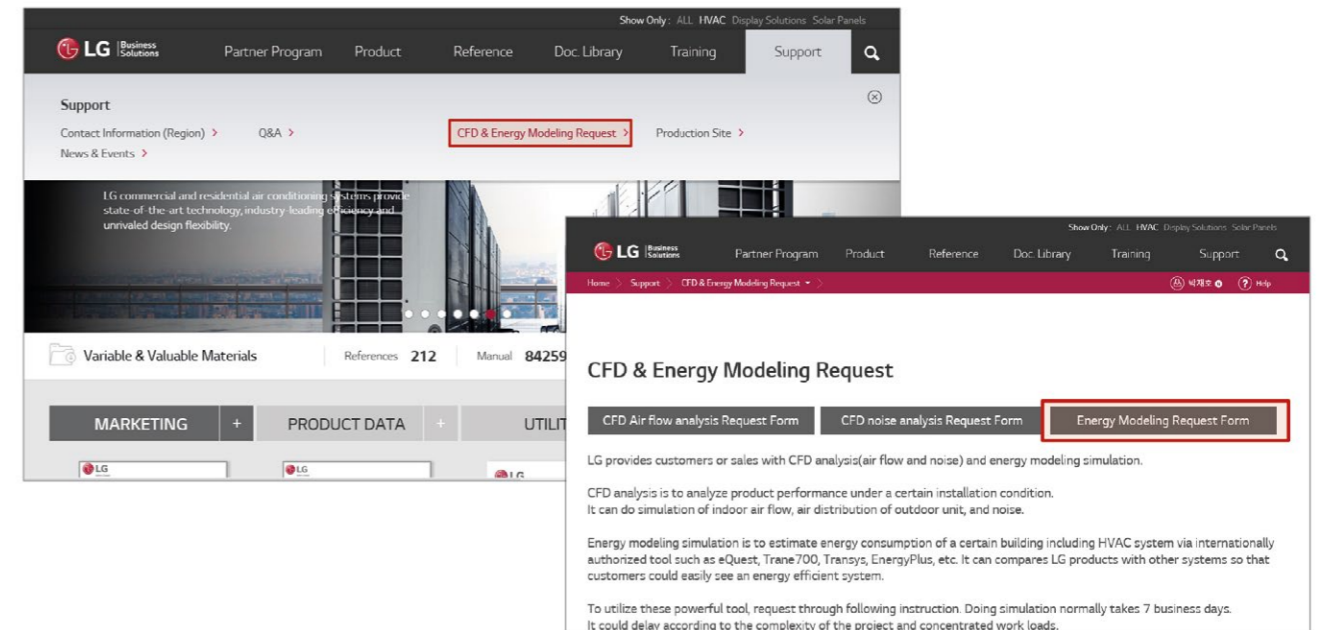
For energy modeling, modeling tool need performance data of product from manufacturer. LG provides performance data for energy modeling tool like eQuest, Trace700, so on.



## Request Process

From the Global B2B Partner Portal (<http://partner.lge.com/global/>), you can download the request form of Energy Modeling and do a request of Energy Modeling Simulation.

<http://partner.lge.com/global> > Support > CFD & Energy Modeling Request



## Request Process

### Energy Modeling Simulation

#### Request Step

1. Download the request form
2. Fill in the form
3. Send request via following email address

Email : [ae-energy modeling@lge.com](mailto:ae-energy modeling@lge.com)

#### Necessary information

- Project name, baseline system(for comparison), proposed system(LG products)
- Plan drawings (CAD file is the best, but PDF files are acceptable)

Building Energy Modeling Request <small>nal Use Only</small>			
Requestor			
Subsidiary	LGE Poland	Name	Krzysztof Rak
E mail	krzysztof.rak@lge.com	Date	2017.01.01
Essential information			
Project and Product Information			
1. Project Name	Megapolis	2. PJT Amount	0.41M\$
3. Status	Access <input type="checkbox"/>	Spec-in <input checked="" type="checkbox"/>	Award <input type="checkbox"/>
4. Site Information	Country: Poland, City: Wroclaw	5. Building type	1F~4F: Residential / 5F~10F: Office
6. LG Product Information	Outdoor Unit: Multi V IV Heat Recovery	Model Name	ARUB00XLE4 (Heat Recovery)
	Indoor Unit: Low Static Duct	Major Model	ARNU12GL2G2
7. Baseline System (for comparison)	<input checked="" type="checkbox"/> Water-cooled chiller <input type="checkbox"/> All-cooled chiller <input type="checkbox"/> PTAC (PTHP) <input type="checkbox"/> Rooftop <input type="checkbox"/> WSHIP <input type="checkbox"/> Other VRF ( ) <input type="checkbox"/> Other System ( )	<input checked="" type="checkbox"/> Boiler <input type="checkbox"/> chiller (Heat Pump) <input type="checkbox"/> Furnace <input type="checkbox"/> Electric Heater <input type="checkbox"/> District Heating <input type="checkbox"/> VRF <input type="checkbox"/> Other System ( )	<input checked="" type="checkbox"/> FCU <input checked="" type="checkbox"/> AHU <input type="checkbox"/> Duct type <input type="checkbox"/> Cassette type <input type="checkbox"/> Other System ( )
8. Reference Employee Name	John Wick	E mail	john.wick@lge.com
Required Data			
	Essential Data	Option Data	
▶ Building Information	Plan, operation schedule	Elevation view, load calculation, building envelope, indoor design temperature	
▶ Product Information (LG)	Model Name and Type	HVAC schedule (LATS cad or LATS HWAC)	
▶ Product Information (Others)	Model Type, Model Name, Model Capacity	HVAC Schedule, FDB, Catalogue	
Please describe additional information such as comparison scenario or comparison cases, etc. in the email.			

BRAND

BUSINESS

PRODUCTS

ENGINEERING  
TOOL

ONLINE LG  
HVAC GUIDE

5

# ONLINE LG HVAC GUIDE

## ONLINE LG HVAC GUIDE

Process Guide	306
Partner Portal	308
Mobile Application	321

# PROCESS GUIDE



## How to Subscribe to LG Air Solution Product & Marketing Information

EU customers can get the latest info about LG SAC business by submitting the form below.

### <Registration Page>

**Get the latest news about LG HVAC!**  
Please fill in the blanks below!

You will receive LG HVAC Newsletter and marketing info, though your e-mail or social-media channel.

**First Name \***  **Last Name \***

**Country \***

Please select the country of residence for your business, not nationality.

**Company Name \***  **Job Title \***

**Phone \***  **Email \***

**Vertical \***

Office  Shopping Mall  Retail  Hotel  Residential  
 Public Facility  Education  Factory  Etc.

**Customer Type \***

Dealer / Distributor  Installer / Contractor  Consultant  
 HVAC Engineer  Procurement  Interior Designer  Home Owner  
 Student  Etc.

**Privacy Policy**

Privacy Policy \*  I have read and understood the Privacy Policy. [Read More](#)

정보를 읽었습니다. RECYCLING  
정기적으로 재활용

**SUBMIT**

QR Code: Quick Access Way



Android / iOS

URL: <https://gcacs.lg.com/l/760323/2020-04-07/21f7d>

### <News Letter>

**ON AIR NEWSLETTER** 2020.04 VOL.48

**STAY AT HOME, STAY HEALTHY**

**NEWS**

**LG Air HVAC's Statement Concerning COVID-19**

Our first priority is our customers and partners during the COVID-19 pandemic. We will continue to provide support to the best of our abilities as we deal with this situation together.

**TREND & ISSUE**

**How to Dispose of Your Air Conditioner Properly**

Disposing of your air conditioner doesn't have to be a challenge. With a little effort, you can easily find out how to dispose of your air conditioner unit both safely and sustainably.

**TREND & ISSUE**

**Fine Dust in the Wind**

Fine dust in the air is becoming an ever-increasing problem in many places around the world. Learn what you can do to help protect yourself from the dangers of fine dust.

**Air Quality and Allergy Advice from Allergy UK**

Maintaining the good air quality of our indoor environments is critical to our health especially when you stay at home for a long time. Read this article and learn from the experts.

**LG.COM** **INQUIRY TO BUY** **PARTNER PORTAL**

LG Air Solution Global Website For Any Questions Partnership with LG

unsubscribe from all emails | update subscription preferences

### <Product Info>

**Download Product Data Book**

[Click here to download the Product Data Book and acquire accurate data on our round cassette.](#)

By reducing the height of the product, the LG Round Cassette maximizes the openness of a space once it has been installed. Its height is a mere 330cm. Figure out more on how LG's round cassette can provide a more refined aesthetic to installations.

**Download Product Brochure**

[Click here to download the product brochure and find out more.](#)

When a product is designed, performance can often be sacrificed for aesthetic or comfort sacrificed for convenience. But LG has encompassed all of these elements into one dynamic unit. [Click here to download the Round Cassette.](#)

LG ELECTRONICS. ALL RIGHTS RESERVED. unsubscribe from all emails | update subscription preferences

### <Digital Campaign>

**ON AIR LG HVAC Story** Sponsored

Wanna know more about our brand new round cassette?  
Click the button below and ...See More

**Superb Interior Design and Performance**

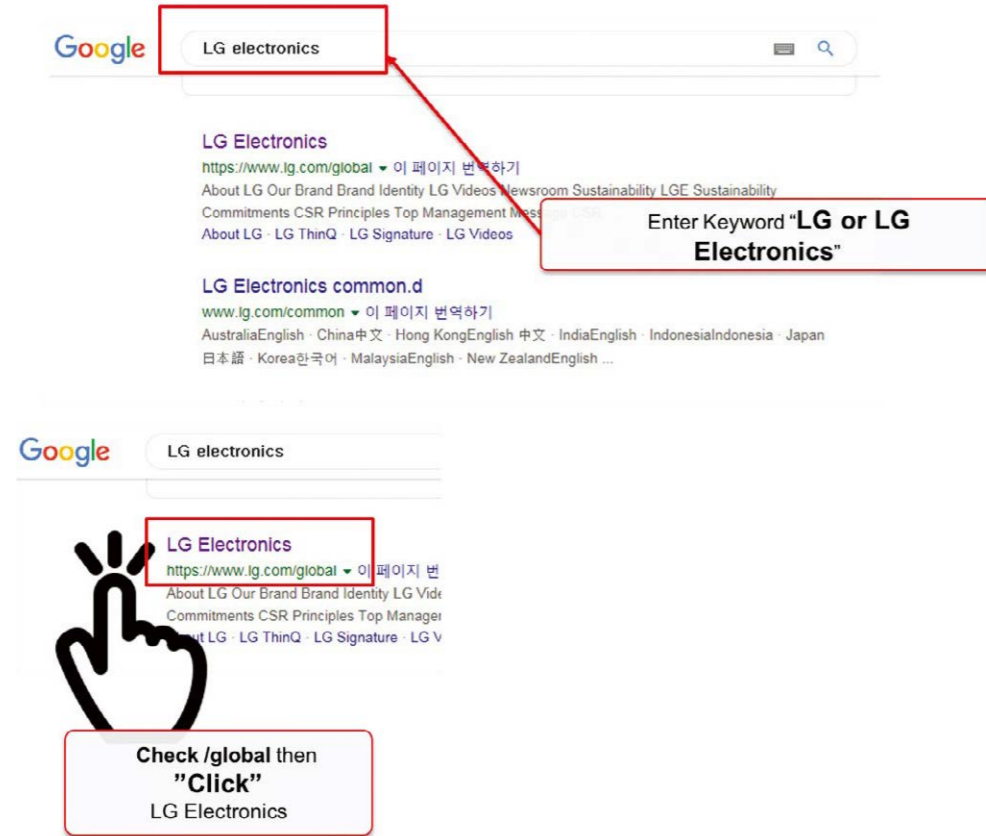
Click "Download" for PDB! **Download**

# ACCESS GUIDELINE

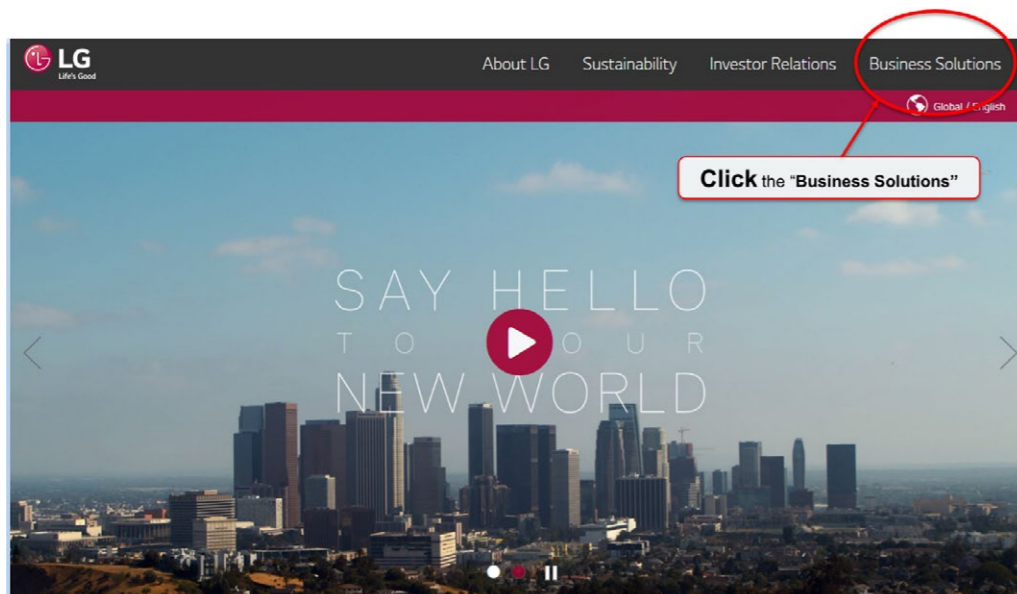


## 1. Input Keyword on Search Engine

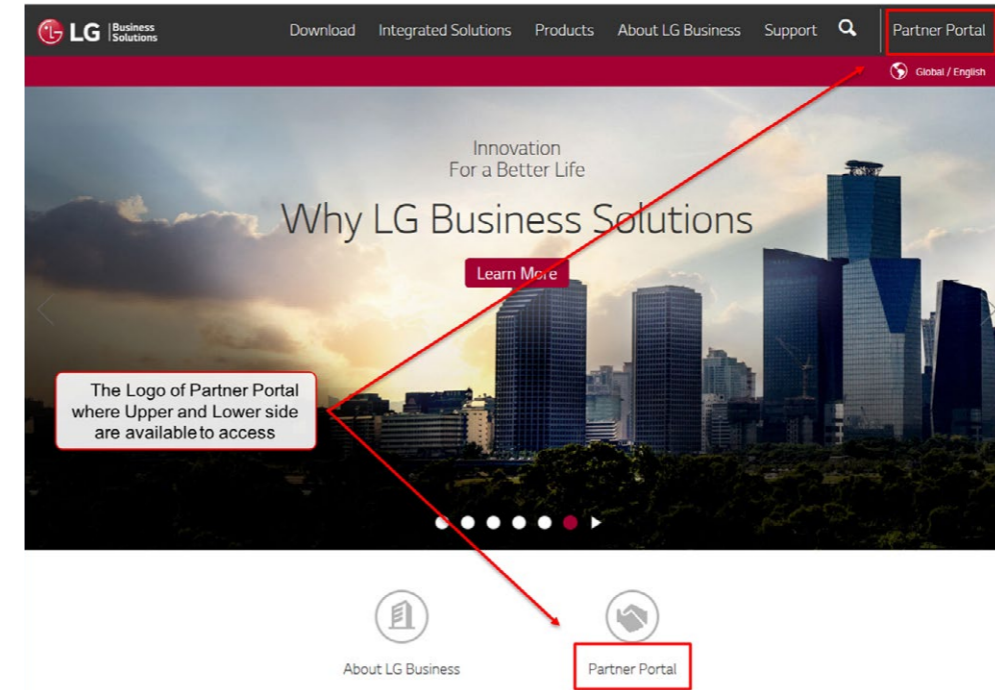
**First!**  
Open Search Engine



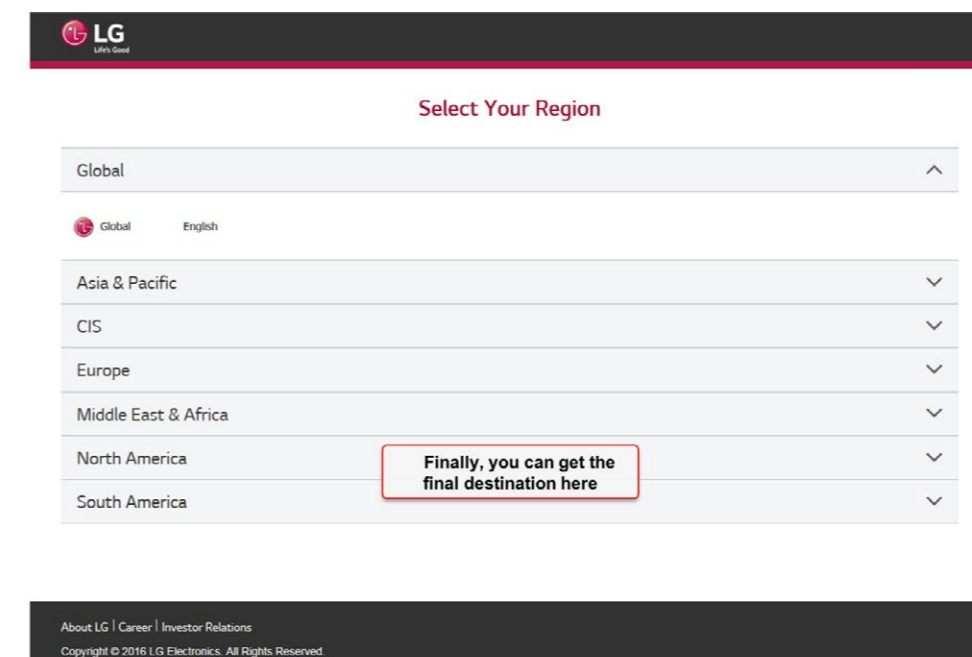
## 2. Go to Website for Registration (Step1)



## 3. Go to Website for Registration (Step2)



## 4. Go to Website for Registration (Step3)

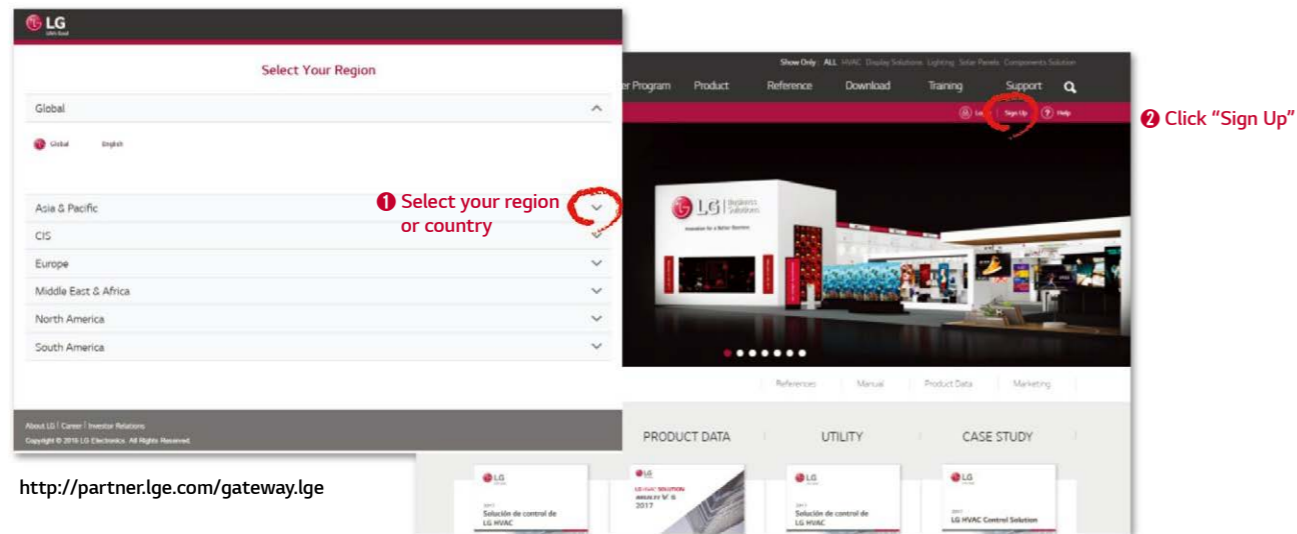


\*If you have any inquiry, please E-mail to [lg.partner.portal@lge.com](mailto:lg.partner.portal@lge.com)



## 5. Select Portal and Access Signing Up

If you access the gateway of B2B partner portal, you can select your region or country to join contents on the portal, members need to sign up.



\*If you have any inquiry, please E-mail to [lg.partner.portal@lge.com](mailto:lg.partner.portal@lge.com)

## 6-1. Sign Up by Member Type

To sign up the portal, members need to select the type of members

\*If you have any inquiry, please E-mail to [lg.partner.portal@lge.com](mailto:lg.partner.portal@lge.com)

## 6-2. Sign Up by Member Type

To sign up the portal, members need to select the type of members

Please input the data and click  
"Verification"

## 7. Input Company Information

Please check up your company name first.

If you cannot find duplication list, then click "New" on the pop-up window.



## 8. Complete Information

Fill out the form and click "Next" button.

01 Membership agreement | 02 Input member information | 03 Completion of register

\* Required Information

Basic Information Of Your Company

Carrying Products \*

Multi V  
Multi  
Single CAC  
Hospitality TV  
Monitor Signage  
...  
Include products which you're interested in

Select the primary product you are carrying

Primary Customer Vertical \* -- Select --

Secondary Customer Vertical -- Select --

Partner Type \* -- Select --

Back Next

We don't want false information such as the Simpsons

01 Membership agreement | 02 Input member information | 03 Completion of register

- Thank you for your registration.
- Before we approve your registration request, you must activate your account with the code sent to your email address.
- If you did not receive this email, please check your junk/spam folder.
- If you entered an incorrect email address, you will need to re-register with the correct email address.

Name

Email (ID)

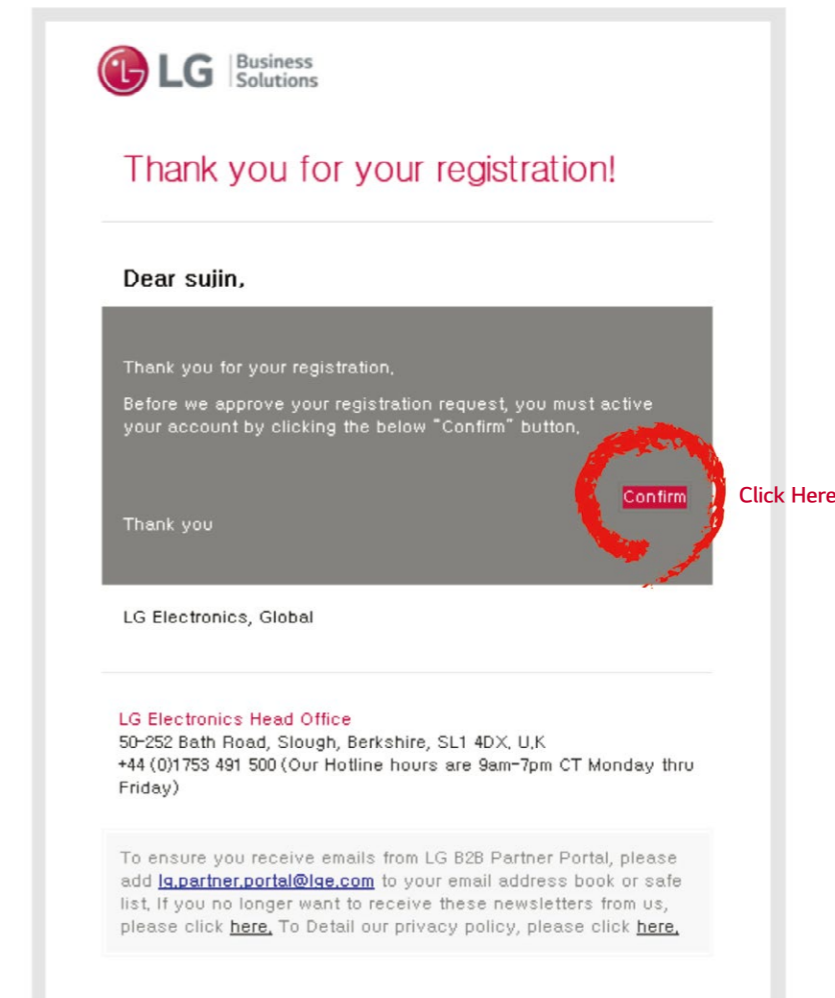
Company Phone Number

Mobile Phone

Home

## 9. E-mail Confirmation

You will receive an authentication mail to confirm the registration. If you get the email, please click the "Confirm" button. After your account is activated, LGE staff will check your registration and approve you to join LG B2B Partner Portal. Please wait until the approval is completed by LGE staff.

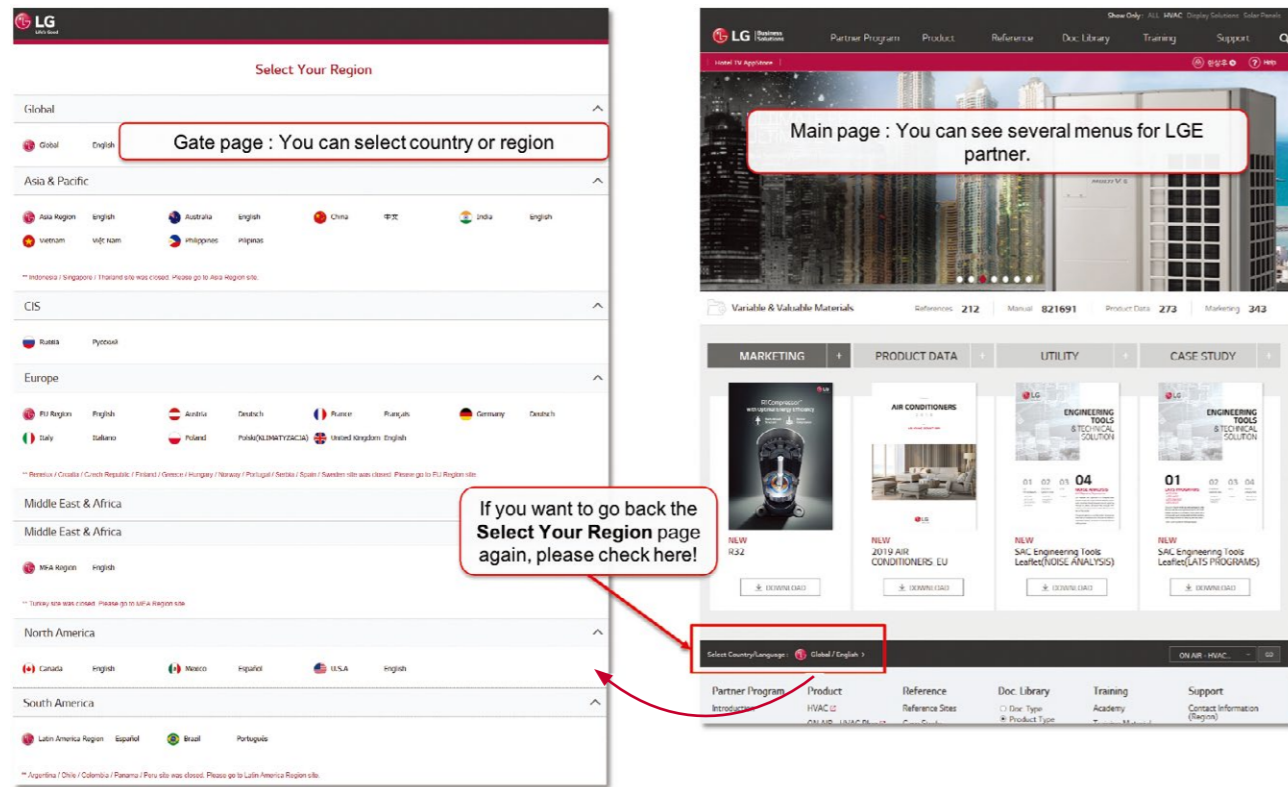


# HOW TO FIND ENGINEERING MATERIALS



## B2B Partner Portal (http://partner.lge.com)

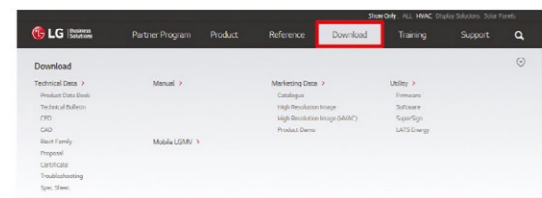
You can download various materials in B2B Partner Portal.



Add new search method and various convenient functions.

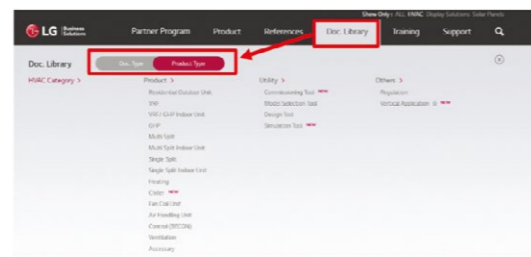
### Previously (I don't get it)

- Search by document type only



### Now (Much better)

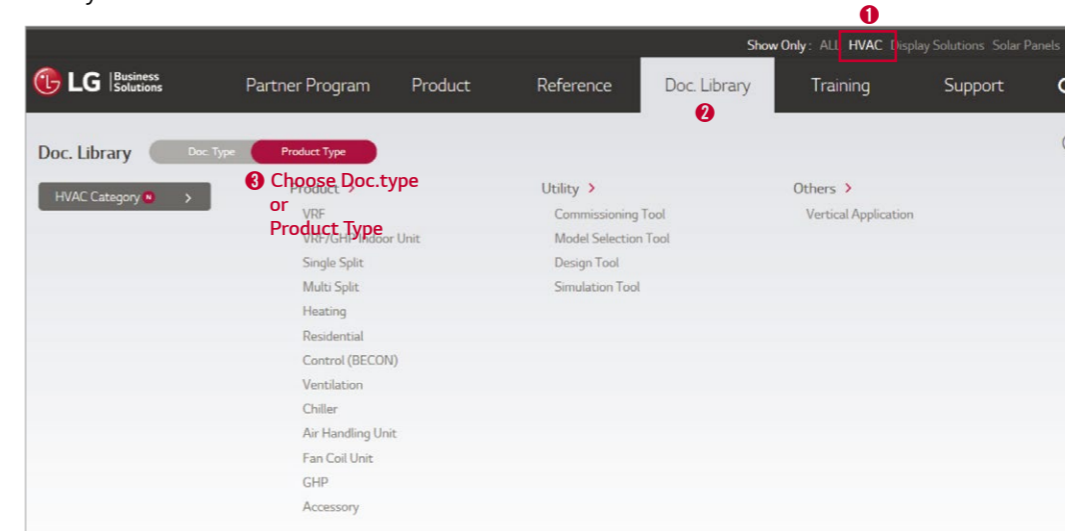
- 2 ways to search  
: add search by product type and maintain search by document type



- Unfolding type interface  
- Convenient function : My documents, easy and quick Q&A  
- Apply new search engine : natural search, improvement search speed

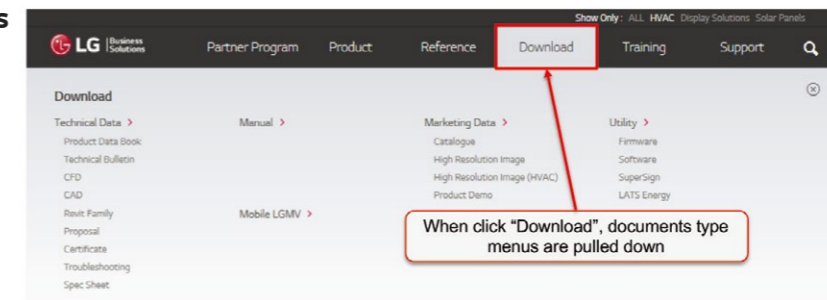
## Product verification

Before you start, you have to check "HVAC" at the top of the screen. Then you can see as shown below.

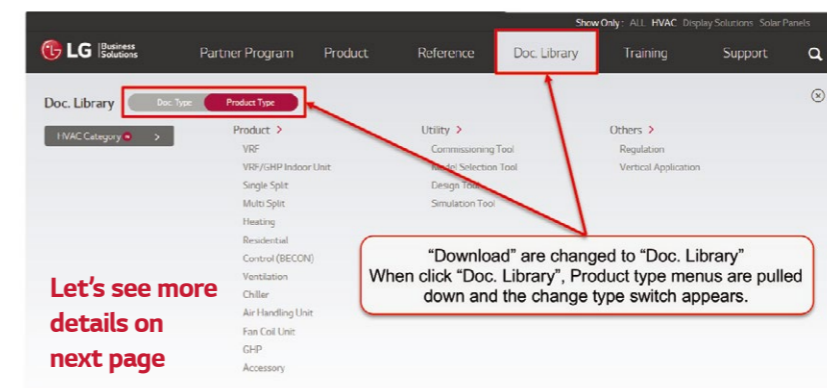


## Way to Search

### Previous



### NEW



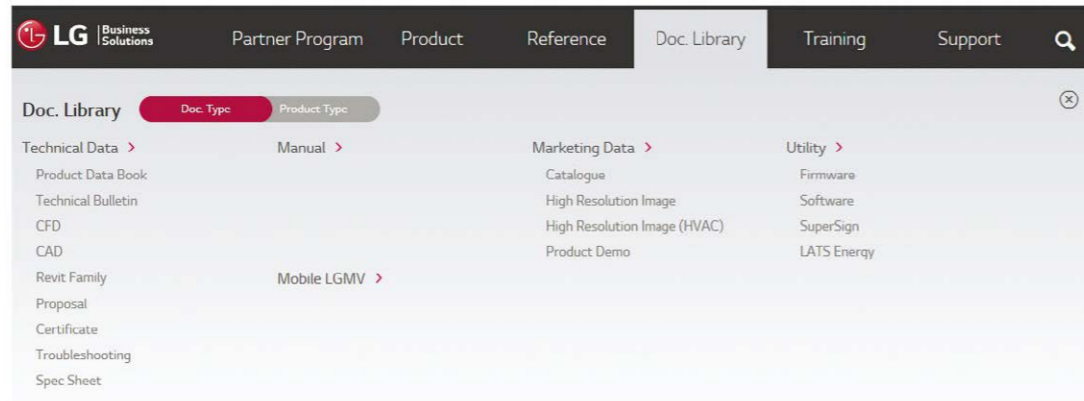
# HOW TO FIND ENGINEERING MATERIALS



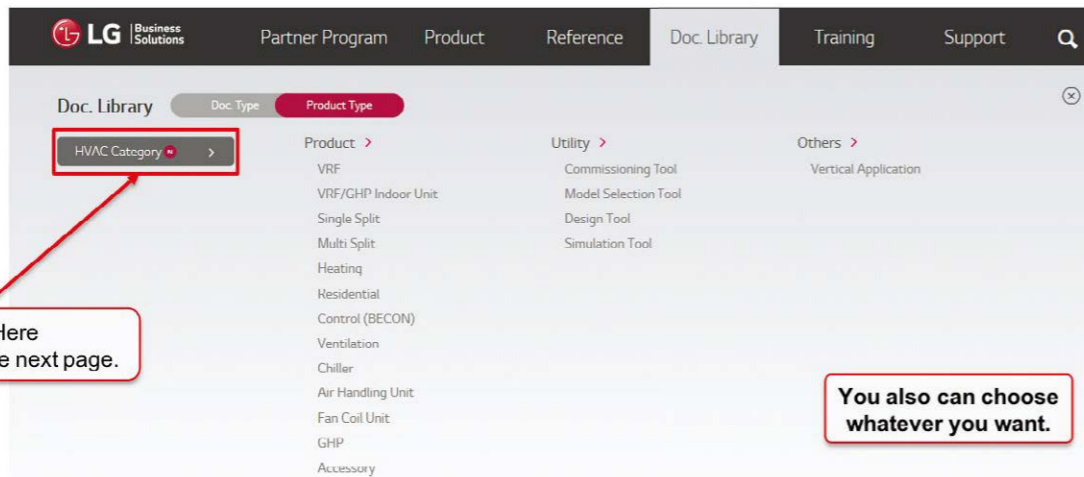
## Way to Search on the Doc. Library

You can download many materials in B2B Partner Portal

### Doc. Type



### Product Type

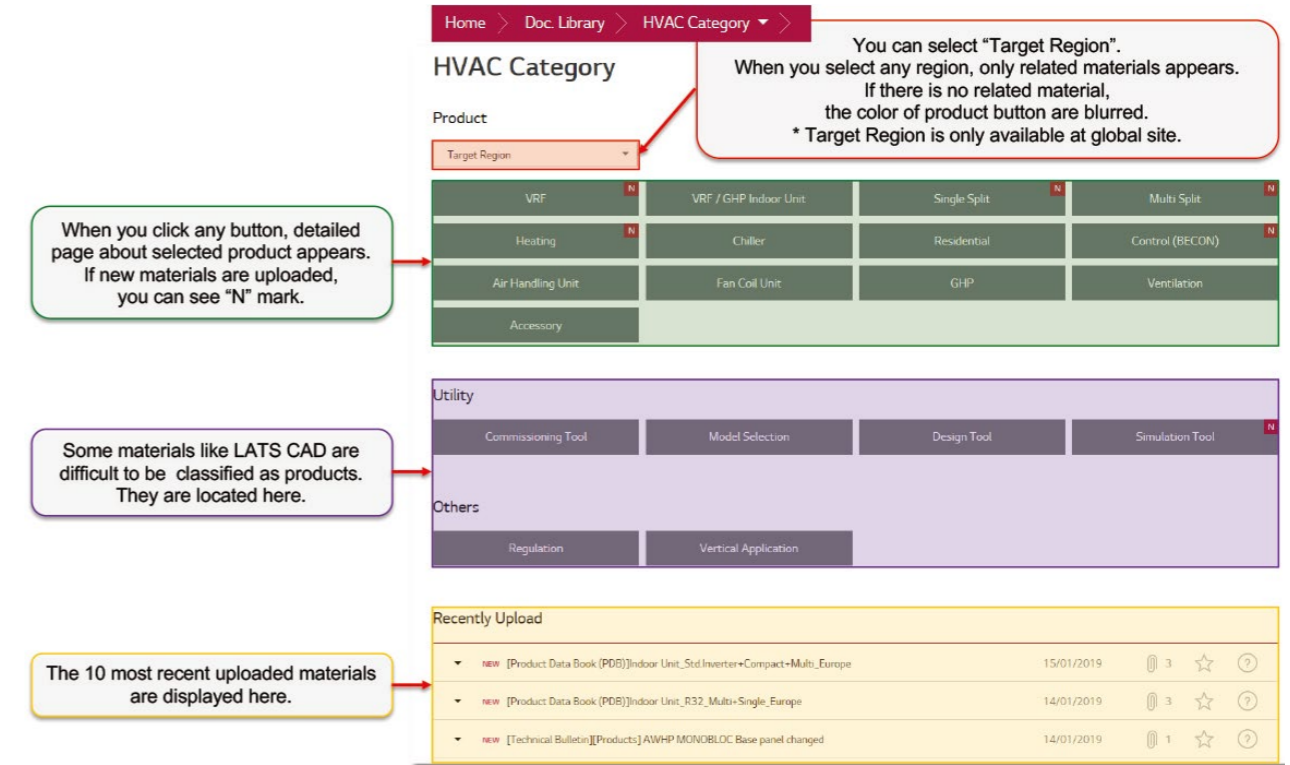


Check Here then you can see next page.

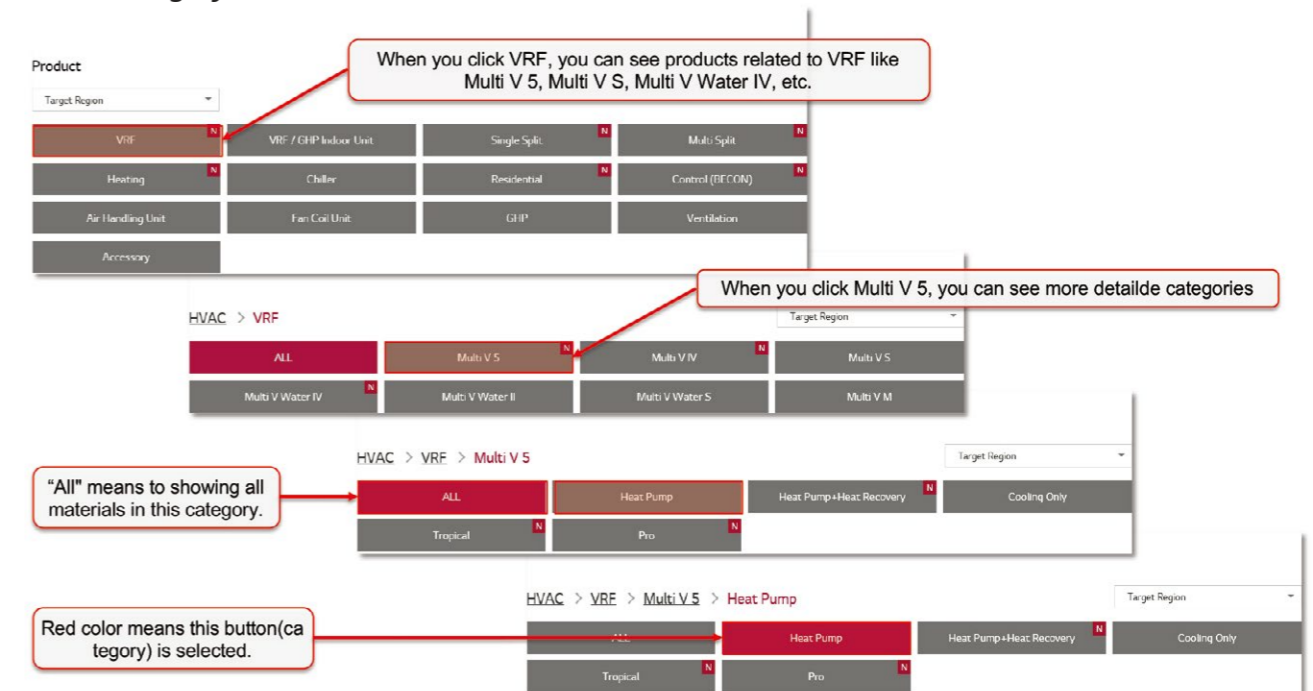
You also can choose whatever you want.

## Product Type Search

### New Search Screen



### HVAC Category





# HOW TO FIND ENGINEERING MATERIALS



## Unfolding Type Interface

Unfolding type interface

\* This figure is same with previous page last figure.

Product

HVAC > VRF > Multi V S > Heat Pump

Target Region

ALL Heat Pump Heat Pump/Heat Recovery Cooling Only

Related materials appears for each category like right figure.

- Application Guide: 19 items
- CAD Block: 25 items
- Catalogue & Leaflet: 6 items
- Competitor Comparison: 26 items
- FAQ & Competitors encounter: 5 items
- Guide Specification: 2 items
- Movie Clip: 1 item

[Print Ad] MULTI V S\_LARGE CAPACITY ODU 13/07/2018

Collateral Type: Print Ad  
Product: HVAC > VRF > Multi V S > Heat Pump  
Issue: 04-2018

[Print Ad] MULTI V S\_DUAL SENSING CONTROL 13/07/2018

[Print Ad] MULTI V S\_TOTAL SHOT 13/07/2018

[Print Ad] MULTI V S\_ULTIMATE INVERTER COMPRESSOR 13/07/2018

[Print Ad] MULTI V S\_CONTINUOUS HEATING 13/07/2018

[Catalogue] [Catalogue] 2018 Multi V S\_MCA 13/07/2018

## Quick Q&A

Convenient function  
- Easy and quick Q&A

- Application Guide: 19 items
- CAD Block: 25 items
- Catalogue & Leaflet: 6 items

Q&A

Main fields are filled in automatically.

\* Required Information

Country\* Select Country

Category\* HVAC Download Catalogue & Leaflet

Name\*

Email\*

Company\*

Telephone

[Print Ad] MULTI V S\_LARGE CAPACITY ODU 13/07/2018

[Print Ad] MULTI V S\_DUAL SENSING CONTROL 13/07/2018

[Print Ad] MULTI V S\_TOTAL SHOT 13/07/2018

[Print Ad] MULTI V S\_ULTIMATE INVERTER COMPRESSOR 13/07/2018

[Print Ad] MULTI V S\_CONTINUOUS HEATING 13/07/2018

[Catalogue] [Catalogue] 2018 Multi V S\_MCA 13/07/2018

## My Documents

Convenient function  
- My documents

- Application Guide: 19 items
- CAD Block: 25 items
- Catalogue & Leaflet: 6 items

Selected material icon is filled.

[Print Ad] MULTI V S\_LARGE CAPACITY ODU 13/07/2018

Collateral Type: Print Ad  
Product: HVAC > VRF > Multi V S > Heat Pump  
Issue: 04-2018

Home Doc Library Product VRF Help

You can find selected material in My Documents

My Documents

It is possible to add the material up to 30, it is deleted after 30 days.

Select All Delete List Results 1 / 30

Catalogue & Leaflet (1)

[Print Ad] MULTI V S\_LARGE CAPACITY ODU 13/07/2018

Movie Clip: 1 item

## Utility & Others Type Search

Step by step search

Utility

Commissioning Tool	Model Selection	Design Tool	Simulation Tool
LGMV	LATS HVAC	LATS CAD	LATS Energy
	LATS Therma V	LATS Revit	Engineering Tool(LATS ISC)s
	LATS AHU for Global	LATS Load	

Others

Vertical Application

Vertical Application

HVAC > Vertical Application

Period DD/MM/YYYY DD/MM/YYYY

Reset Search

Results 66

- [Vietnam] LG Hotel Solution\_Indo\_190716\_ENG 20/10/2018
- [Lithuania] Hotel Solution\_IDU Control based on check in and occupancy info 30/10/2018

We also have LATS-Chiller but not uploaded yet.  
So, please ask us if you want it.

# HOW TO FIND ENGINEERING MATERIALS



## New Search Engine

Add new search method and various convenient function

Previously

- it is possible to search for only matched word

Search Result: "Multi V 5 Heat Recovery"

Multi V 5 Heat Recovery

Reference (0) | Doc. Library (0) | Training (0) | News (0) | Material (3)

Technical Data (0) | Manual (0) | Marketing Data (0) | Utility (0)

When Searching for "Multi V 5 Heat Recovery", there is **no result.** but, when Searching for "Multi V 5\_Heat Recovery", there are **3 results.** Only "\_" (under bar) is different.

Search Result: "Multi V 5\_Heat Recovery"

Multi V 5\_Heat Recovery

Reference (0) | Doc. Library (3) | Training (0) | News (0) | Material (3)

Technical Data (3) | Manual (0) | Marketing Data (0) | Utility (0)

Show: Best Match | Product: | Submit

**Product Data Book**

Multi V 5\_Heat Recovery+Heat Pump\_380V+380-415V\_EU  
Doc Library>Technical Data>Product Data Book | Europe | R410A | 50/60Hz | Registration Date 30/01/2019 (DD/MM/YYYY)

New

- Natural search  
- Improvement search speed

Search Result: "multi v 5 heat recovery"

multi v 5 heat recovery

Doc. Library (7) | Reference (0) | Manual (0) | Technical Data (5) | Marketing Data (0) | Utility (2) | Others (0)

Sort by accuracy | Sort by date

When Searching for "Multi V 5 Heat Recovery", or, "Multi V 5\_Heat Recovery", results are same.

**Product Data Book**

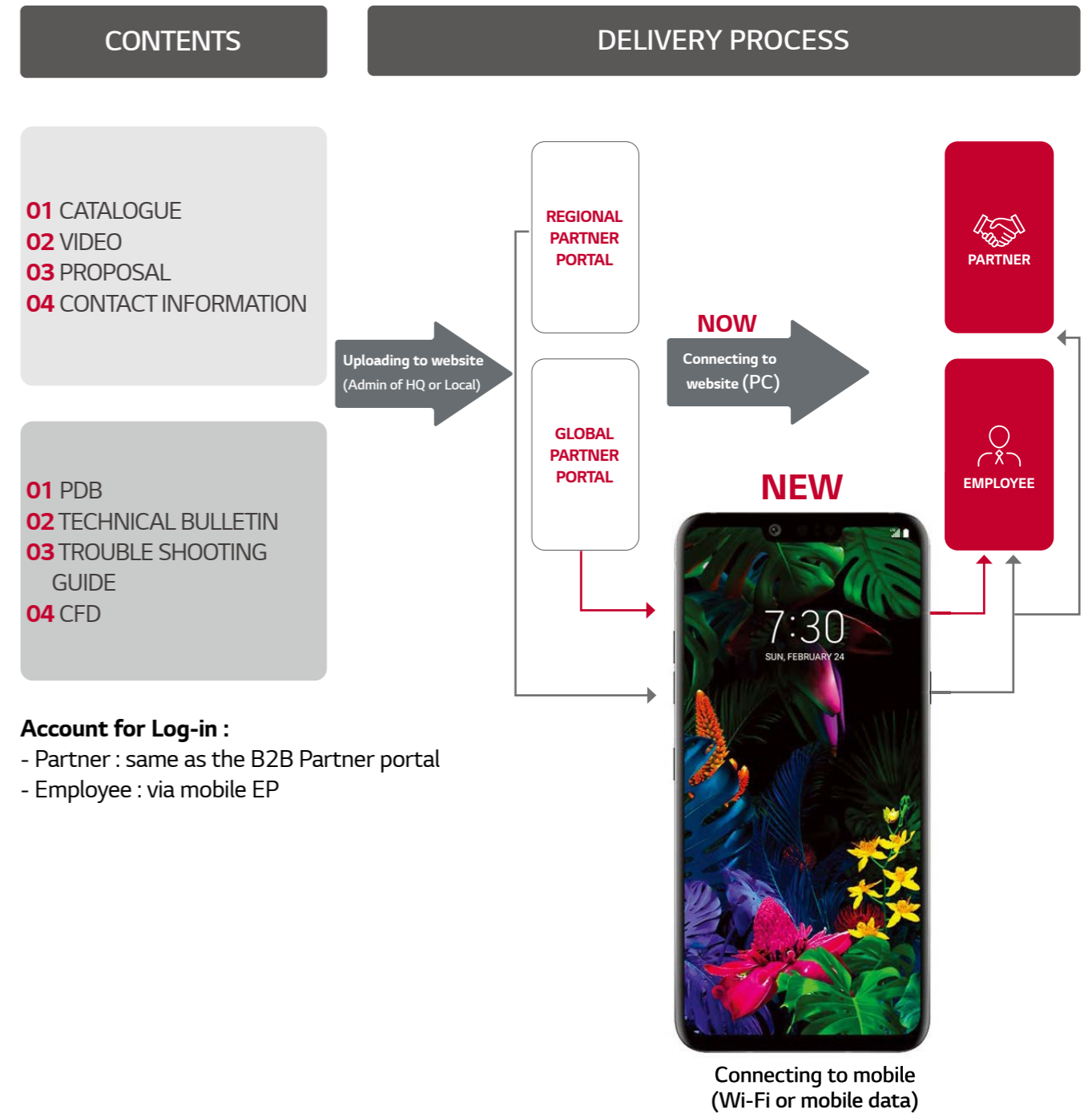
Multi V 5\_Heat Recovery+Heat Pump\_380V+380-415V\_EU  
Doc Library>Technical Data>Product Data Book | Europe | R410A | 50/60Hz | Registration Date 30/01/2019 (DD/MM/YYYY)

Multi V 5\_Heat Recovery+Heat Pump\_380V+380-415V\_Australia  
Doc Library>Technical Data>Product Data Book | Australia | R410A | 50/60Hz | Registration Date 24/01/2019 (DD/MM/YYYY)

# WHAT IS THE CAC PARTNER APP?



Among many contents of the B2B partner portal, only the information necessary for sales is collected on mobile. Quickly find, download, and use the information you need in the field.



### Account for Log-in :

- Partner : same as the B2B Partner portal
- Employee : via mobile EP

\* Disclaimer All Product, Product Specifications and Data in this catalogue are subject to change without notice to improve reliability, function or design or others.

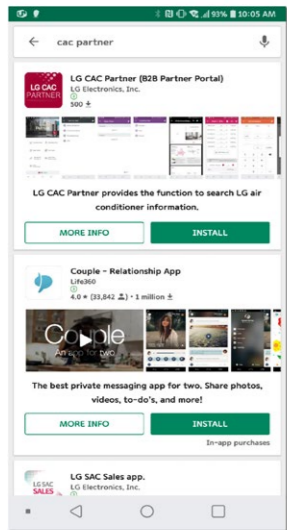
# CAC PARTNER APP.



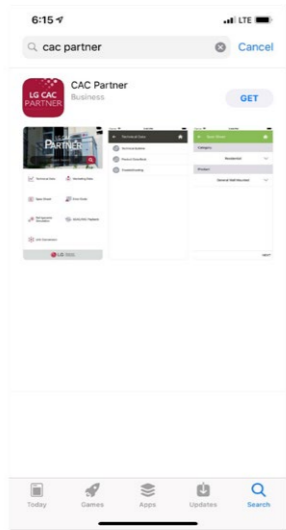
## How to Install?

Among many contents of the B2B partner portal, only the information necessary for sales is collected on mobile. Quickly find, download, and use the information you need in the field.

### Google Play Store screen



### Apple Store screen



Android

URL : <https://play.google.com/store/apps/details?id=com.lge.cac.partner>

QR:



iOS

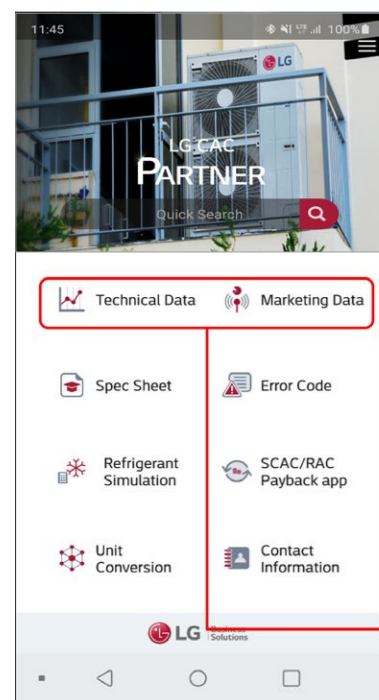
URL : <https://itunes.apple.com/kr/app/cac-partner/id1445374604?l=en&mt=8>

QR:

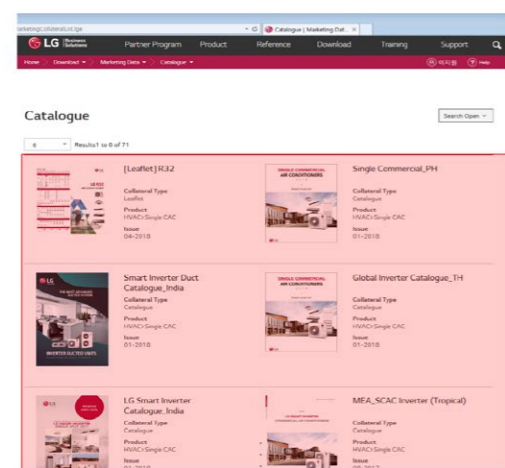


## Main Screen

The data of app. is directly linked to the portal. To get a wide range of useful information, you need to increase portal's resources.

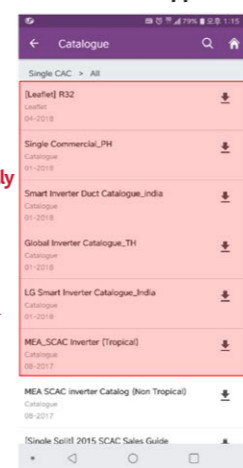


### B2B Partner Portal



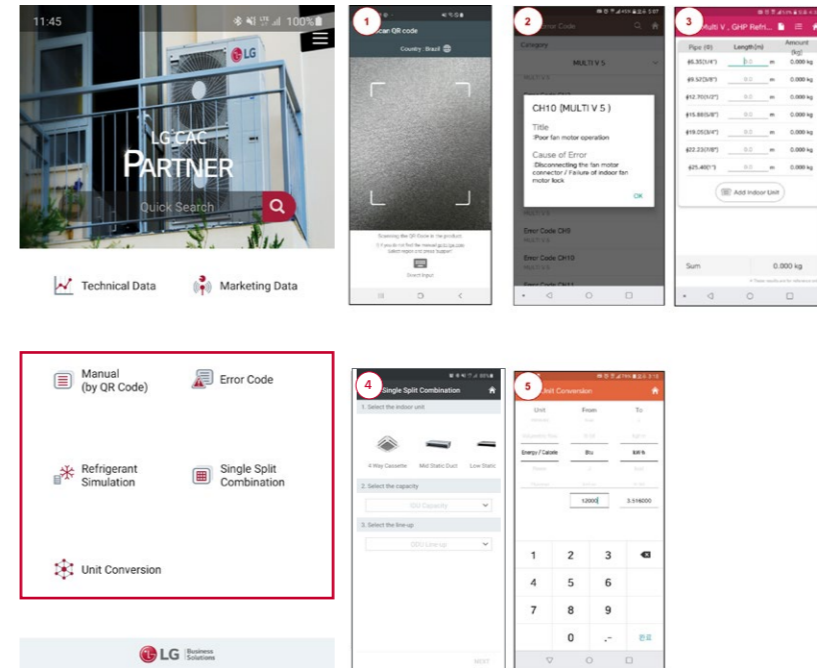
Data is updated automatically

### CAC Partner App.



## Main Screen

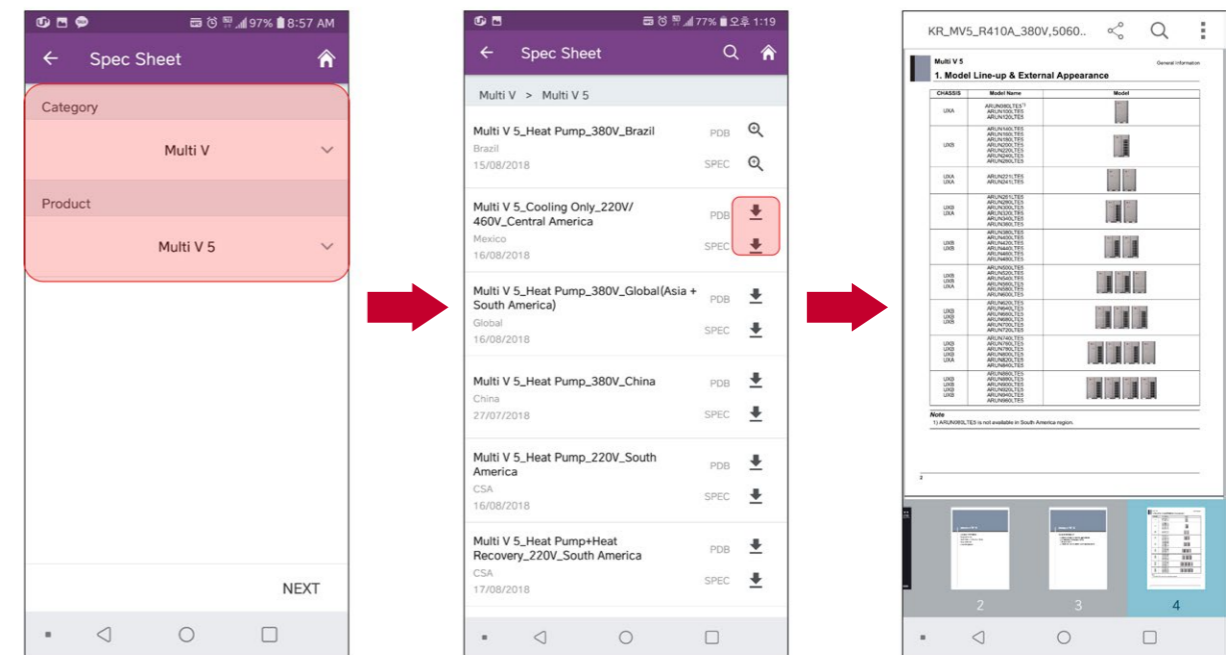
If you access the Partner App. through your local account of B2B partner Portal, You can use the various contents and convenient functions on mobile.



- 1 Manual (by QR Code)  
: Scan the QR code to find the manual
  - 2 Error Code  
: Diagnose errors and provide countermeasures
  - 3 Refrigerant Simulation  
: Calculate the amount of additional refrigerant in the product
  - 4 Single Split Combination  
: Find indoor/outdoor combinations in a different type of Single Split
  - 5 Unit Conversion  
: Quickly convert various units
- \* item 4 may not appear by region.

## Examples of Main Features

You can immediately download the technologies and sales data provided on the web.

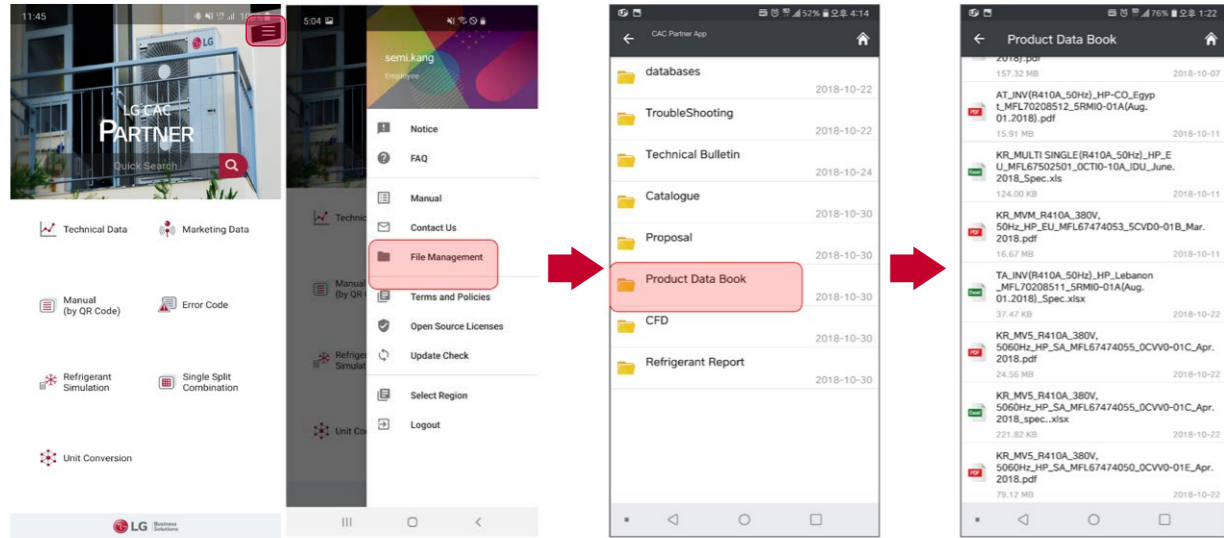


# CAC PARTNER APP.



## Examples of Main Features

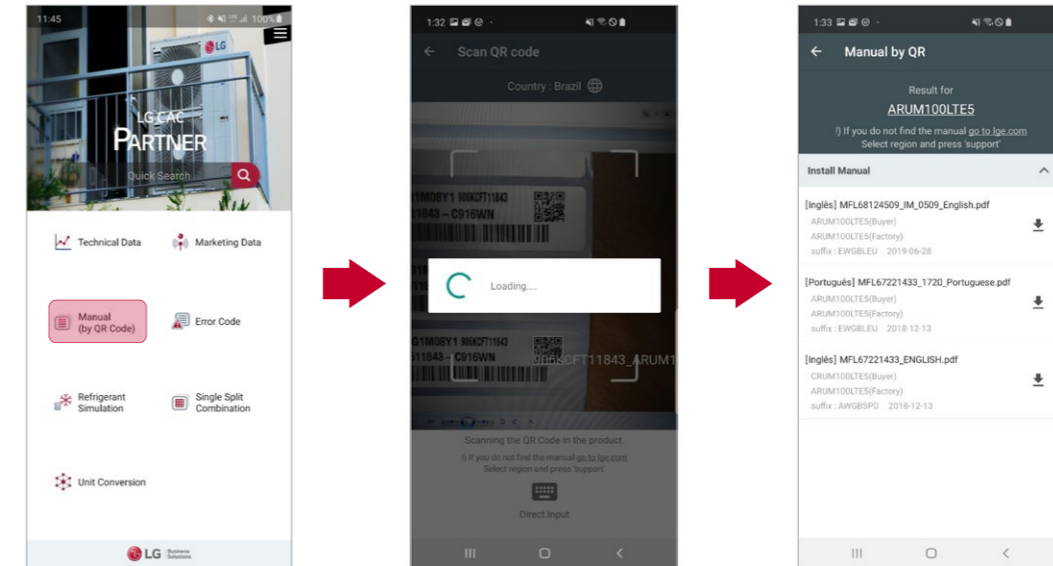
The stored files can be opened continuously by using the file management. It is very useful even in an internet-free environment.



## New Function : QR Code Scan for Manual

You can scan the QR code on the product label to open the manual of that model. It is able to immediately check the materials with one scan.

3 kinds of Manuals available : Installation, Owner's, Quick



## New Function : Employee Login by EP e-mail

Current version (Only for Android)

Employee authentication login method through Mobile EP

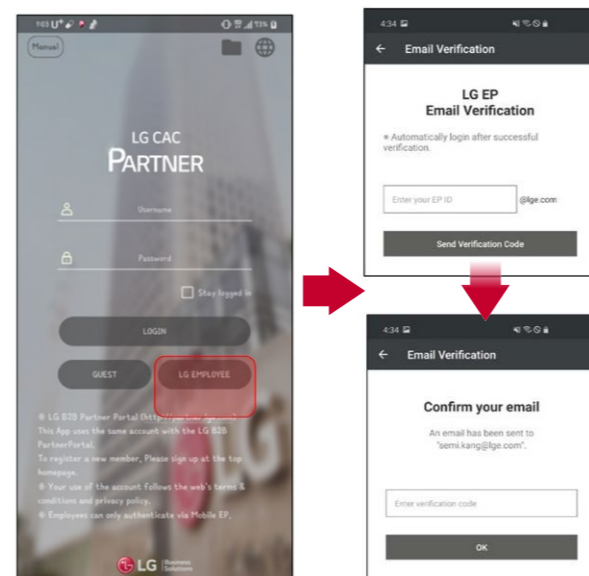


- \* Login is not possible without installing Mobile EP
- \* iOS version of Mobile EP is not available. (App login was not for iOS users.)

→ It was a problem of this APP caused by expanding usage.

New version

(Available for both Android & iOS users)

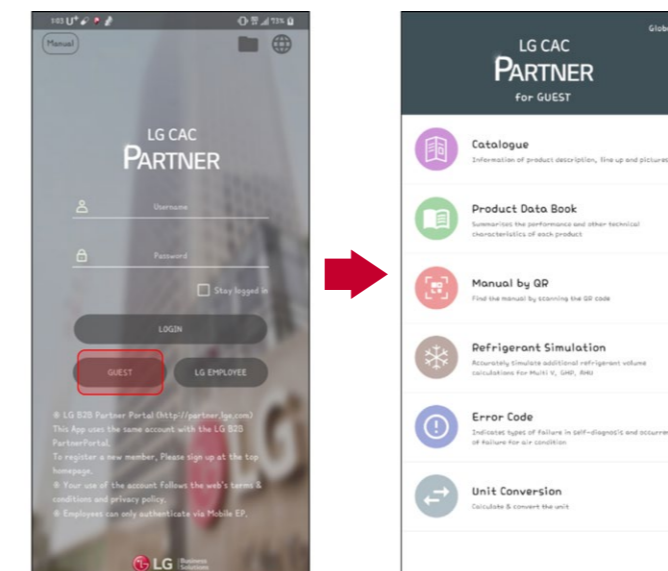


If your first e-mail authentication is successfully finished, you are automatically logged in as long as you don't log out.

## New Function : Guest Mode

New version (Possible for both Android & iOS)

Data can be opened without logging in



# CAC SERVICE APP.



## 1. LG CAC Service App.

Provide solutions for fast and accurate service (cause analysis, action guide), and secure overseas service quality.

**Multi V**      **Single**

**Multi**      **Heating**

- Error Code & T/S Guide
- Technical Bulletin
- Manual (by QR Code)
- Knowledge Bank
- Engineering Tools
- Part management
- Fault prediction
- AR check
- SVC Bulletin

U.S.A.      EU Region      Asia Region

Latin America

## 2. Main Function

LG CAC Service App Main Function.



### Error Code & Trouble Shooting

Error Code Search and Mobile Version Action Guide



### Documents

Integration of documents related to service maintenance distributed in each server (B2B Portal, GSCS)

- Technical Bulletin
- Manual (by QR Code)
- Knowledge Bank (Local Know-How)



### Engineering Tool

Provide convenience function

- Refrigerant Calculation
- Unit Conversion
- Dip Switch Setting Guide
- Remote Call



### Etc.

Provide add-on

- File Manager
- Contact Information

## 3. How to Install

Search for "cac service", "lg cac service", "lg cac service" in the Google Play Store. After downloading the app, Check the terms and conditions.

11:47 U+ 99%

← lg cac service! 1

Did you mean: lg ac service 2

LG CAC Service  
LG Electronics, Inc.      Install

Rated for 3+ 3

LG CAC Service provides the service information for LG air conditioner.

LG CAC Partner  
LG Electronics, Inc.      Open

4.5 ★  
10 reviews      1K+ Downloads      Rated for 3+ 3

LG CAC Service Application Terms of Use

1. Introduction  
LG Electronics, Inc. ("LGE" or "we") welcomes you ("you" or "users") to the LG CAC Service Application ("the App") and Service (together with the App, "the Services"). The Services allows you to find and download the services & technical contents of system air-conditioner through your mobile device and use additional functions. Please read the LG CAC Service Application Services terms of use ("Terms of Use" or "Agreement") carefully before using the Services. By accessing or using the Services, you agree that you have read, understood and agreed to be bound by the terms and conditions of this Agreement and any and all applicable laws, rules and regulations. If you do not agree to these Terms of Use, please do not use or access the Services. This App requests permission to access your information including, without limitations, camera, storage etc. We do not collect the information above; we only accesses the information for the smooth operation of the application. We will always make sure to protect the users' information, and we will do our best to ensure security maintenance.

2. Information about us  
LG Electronics, Inc. is a corporation registered in Korea under registration number 1070614076 with its

I agree

CANCEL      OK

## 4-1. How to Use (Login)

Select Region

- Global
- Asia Region
- EU Region
- Latin America Region
- MEA Region
- Austria
- Australia
- Brazil
- Canada
- China
- France
- Germany

OK

CAC  
LG SERVICE

User ID

Password

Remember me

Login

Login as a Guest      LG Employee

Select region (19 regions)

### Input ID and Password

- If you have B2B Portal Account
- This app account is same as B2B Portal account

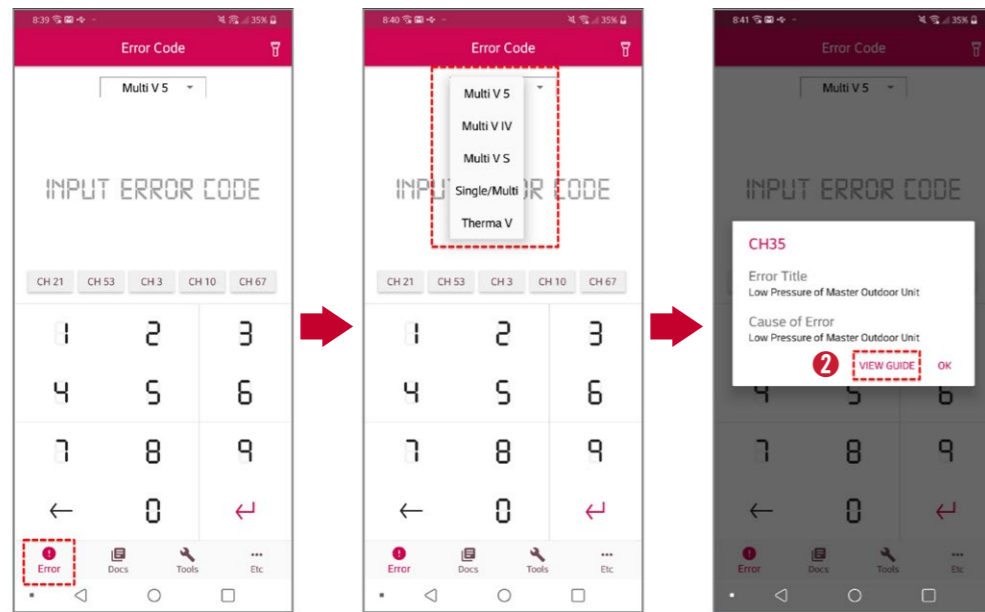
### Register a new account

- If you don't have B2B Portal Account



## 4-2. How to Use (Error Tab)

Click "Error" Tab for checking Mobile Trouble Shooting Guide.

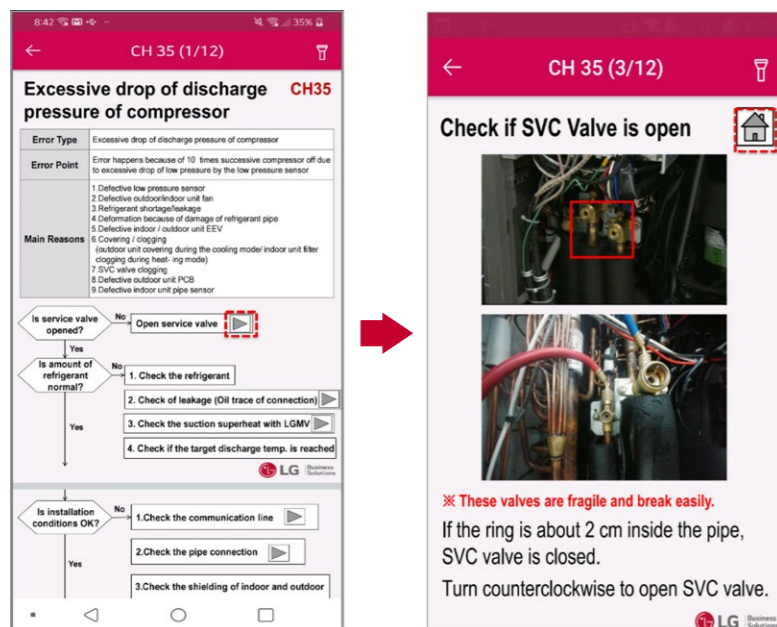


Error code search screen

Select product category

- You can simply see the title and cause of the error code.
- If you want to see more details, Click "VIEW GUIDE"

You can check Mobile Trouble Shooting Guide.

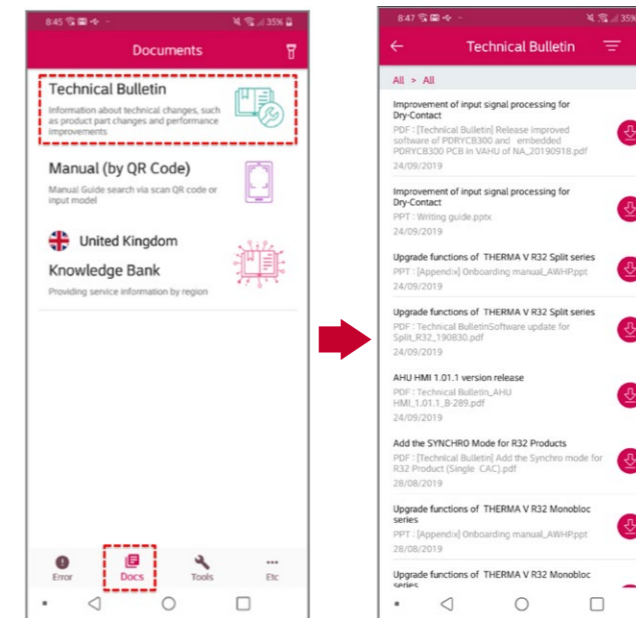


Provide Mobile T/S Guide

- If you want to see the details, Click "▶"
- and if you want to go back, Click "🏠"

## 4-3. How to Use (Docs Tab)

Click "Docs" Tab for checking Documents about models.



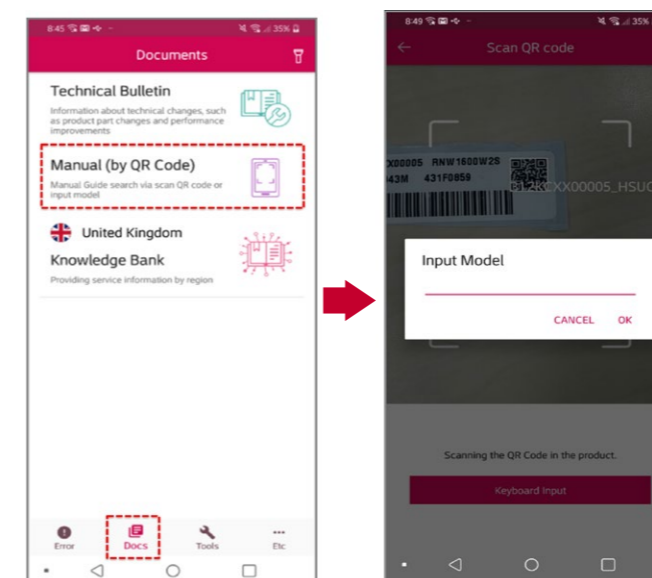
Documents

Technical Bulletin

1. Technical Bulletin
2. Manual (by QR Code)
3. Knowledge Bank

- You can see Technical Bulletin just like B2B Portal
- It provides technical details such as new function or logic of LG products.

Click "Docs" Tab for checking Documents about models.



Documents

Manual by QR Code

1. Technical Bulletin
2. Manual (by QR Code)
3. Knowledge Bank

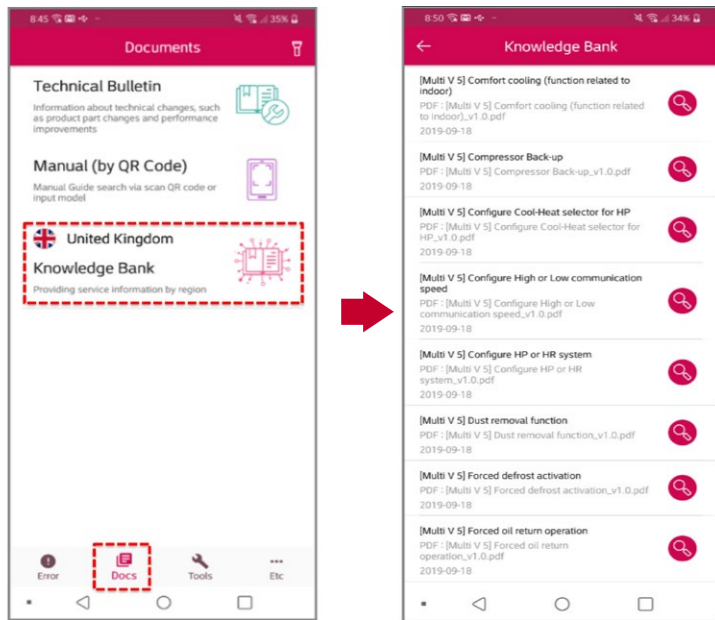
- You can check manuals using QR Code
- If you cannot find QR Code, Input model name. Then you can check manuals.

# CAC SERVICE APP.



## 4-3. How to Use (Docs Tab)

Click "Docs" Tab for checking Documents about models.



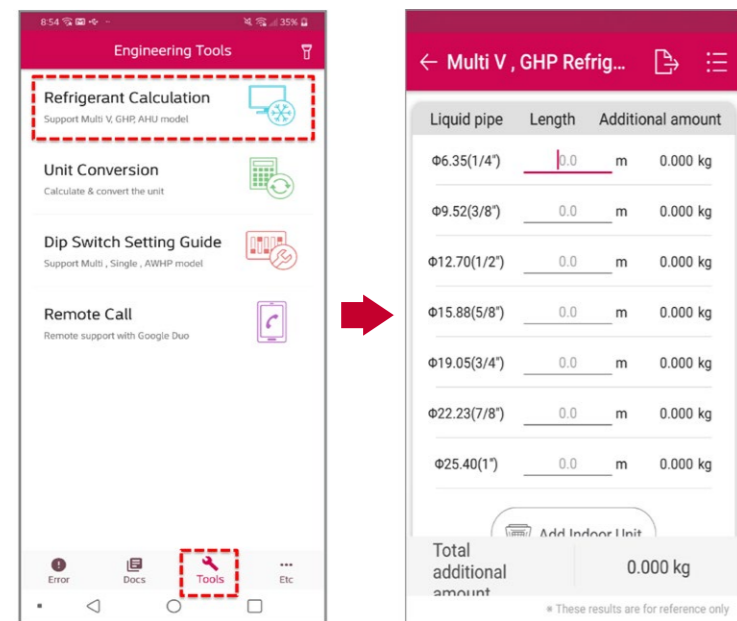
Documents Knowledge Bank

1. Technical Bulletin
2. Manual (by QR Code)
3. Knowledge Bank

- It provides information on service know-how.
- The Pilot version provides the same content for all regions. (refer to Netherlands Knowledge Bank) It is just an example.
- After own server development is completed, We will operate a separate knowledge bank in each region. Then if you send us a summary of what you are uploading to Knowledge bank, we can update it.

## 4-4. How to Use (Tools Tab)

Click "Tools" Tab for using convenient functions.

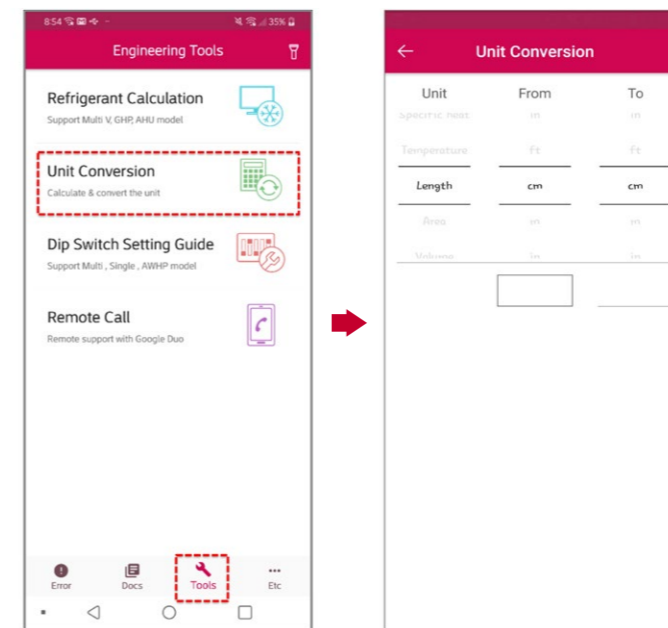


Engineering Tools Refrigerant Calculation

- You can use refrigerant calculation function
- This function helps to simplify complex calculations in the field.

## 4-4. How to Use (Tools Tab)

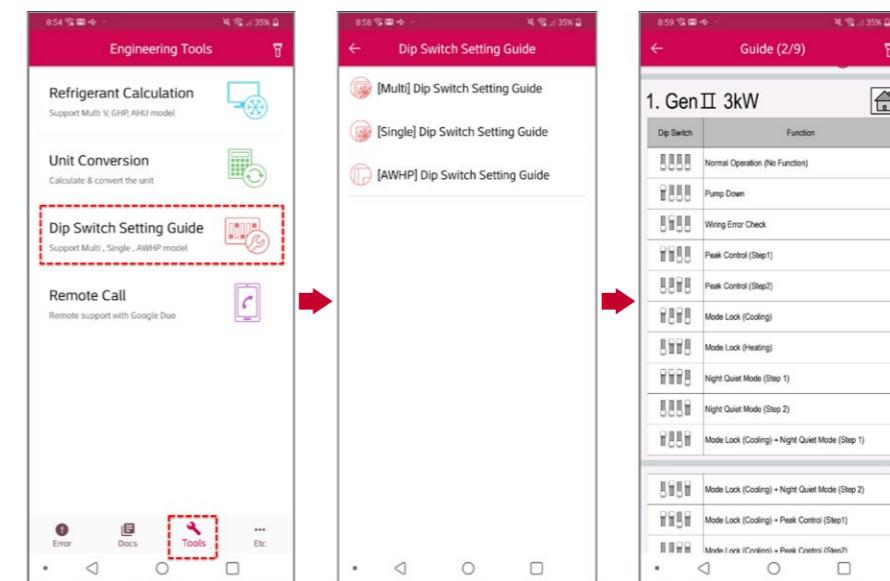
Click "Tools" Tab for using convenient functions.



Engineering Tools Unit Conversion

- You can use unit conversion function
- This function will be useful in the field.

Click "Tools" Tab for using convenient functions..



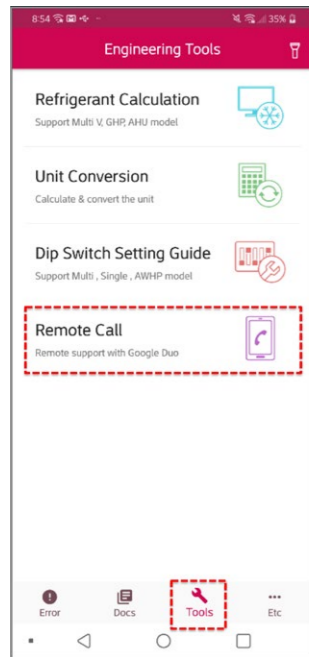
Engineering Tools Dip Switch Setting Guide Dip Switch Setting Guide

- If you handle a model you don't know, you can see how to set the dip switch on the PCB

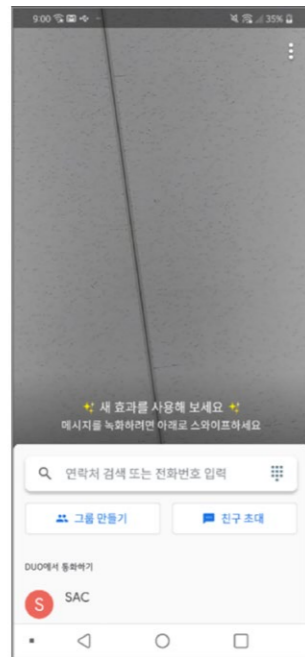


## 4-4. How to Use (Tools Tab)

Click "Tools" Tab for using convenient functions.



Engineering Tools

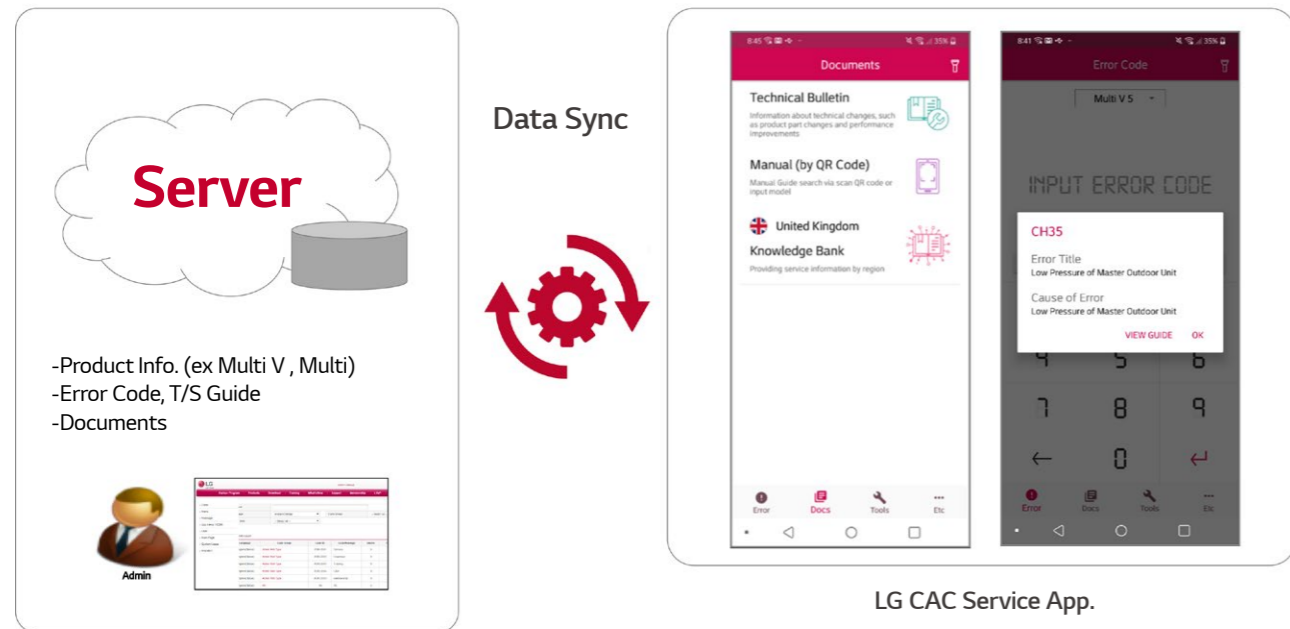


Remote Call (Google Duo)

- You can use remote call to someone in your address book.
- If you want to show any situation, use this function.

## 5. Main Function Structure

Load in real time according to server contents change.



Server and Administrator



## 1-1. How to Install?

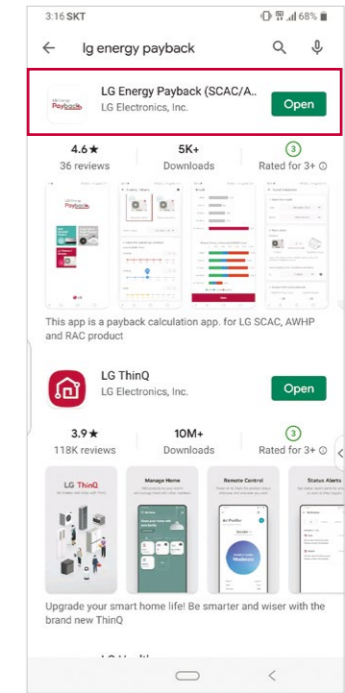
Search "LG Energy Payback" in Google Play Store.

Android  
URL : <https://play.google.com/store/apps/details?id=com.lg.smartinverterpayback>

QR:

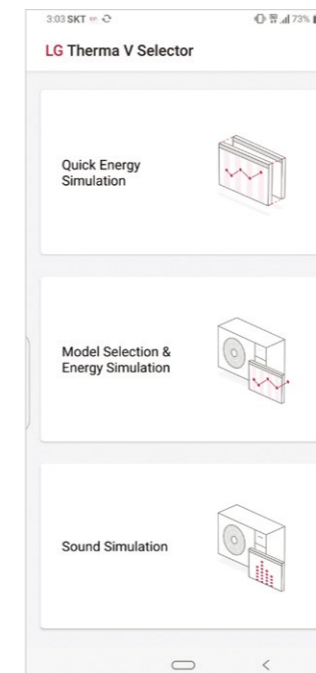


\* iOS version will be available within 2020 on the Apple App Store.



Google Play Store screen

## 1-2. Simulation Mode



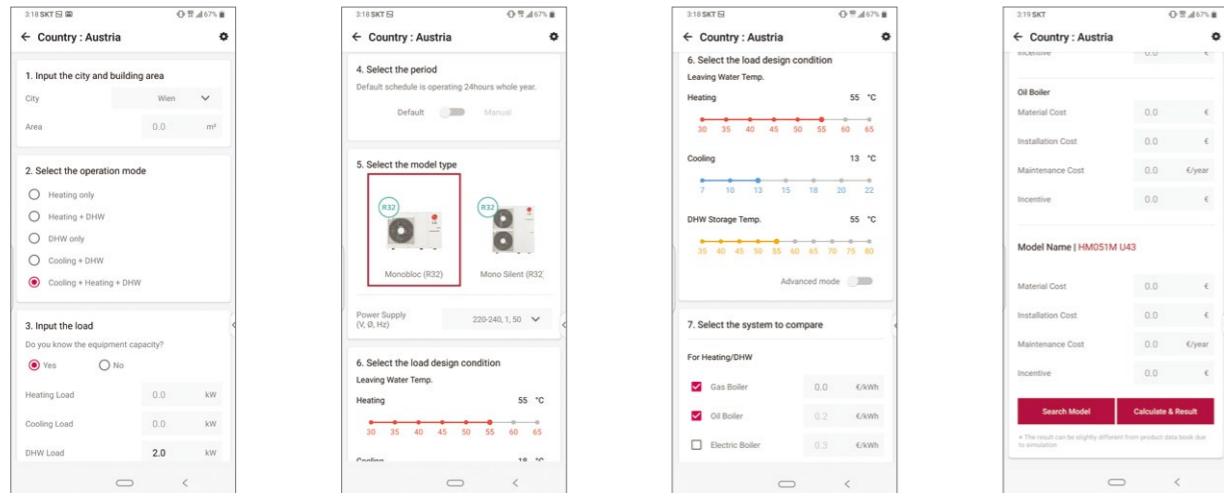
- ➔ **'Quick Energy Simulation'** is a quick & easy mode. Users can see the annual energy consumption, cost, and CO<sub>2</sub> emission with several input, which is similar to the LG Therma V website version
- ➔ **'Model Selection & Energy Simulation'** is to provide more information about model, energy simulation, and payback simulation. Users can select or input more information about site or design condition, then can see the suitable model, annual energy consumption, cost, CO<sub>2</sub> emission, and payback result
- ➔ **'Sound Simulation'** is to see the calculated sound result





## 2. Model Selection & Energy Simulation

Before choosing an air to water heat pump, many customers wonder how much energy costs can be saved compared to conventional heating systems, and how to select a product with the right capacity for the home. The LG THERMA V selector allows you to calculate annual energy costs and payback periods as well as model selection through sophisticated simulations through simple input values.



- City selection
- Building area input
- Operation mode selection
- Load input
- Operation period selection
- Model type selection
- Design condition input
- System selection to be compared
- Costs input for systems
- Searching model that meets criteria

## 3. Result

After the simulation, analysis results including initial investment cost, annual energy consumption, and payback period can be checked in the form of various graphs. Moreover, this report is provided in PDF format and can be shared by e-mail and messenger.



- Simulation conditions summary
- Initial cost
- Annual energy consumption
- Annual cost
- Annual CO<sub>2</sub> emission
- 10-year LCC analysis
- 15-year LCC analysis
- Payback year
- 15-year LCC analysis graph

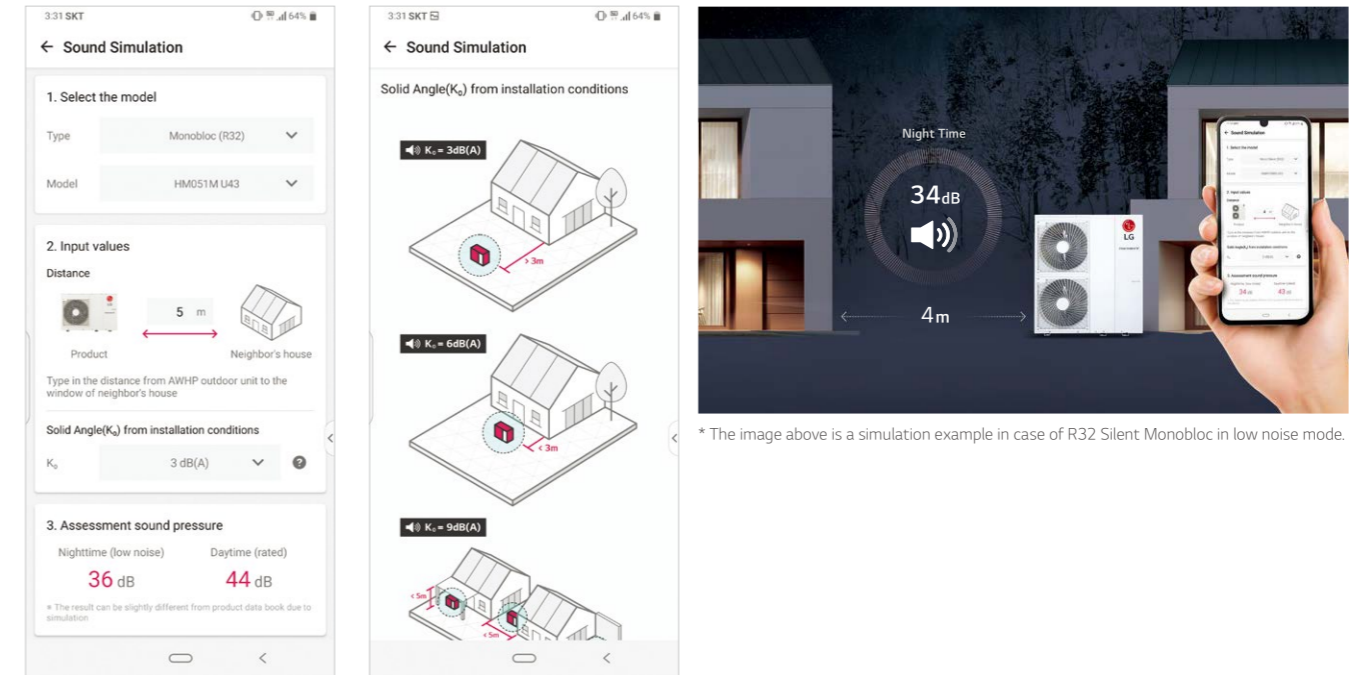
## 4. Report



- Cover page
- Site information & design condition
- Product specification
- Annual energy consumption
- Life cycle cost
- Drawings

## 5. Sound Simulation

Consumers are also wondering how much sound level will be after installing the Air to Water Heat Pump product. Using the sound simulation function of Therma V selector, you can predict the expected sound pressure values in the daytime and nighttime according to the installation distance and conditions.



- Model selection
- Distance input
- Solid angle selection
- Reference for solid angle selection

\* The image above is a simulation example in case of R32 Silent Monobloc in low noise mode.

# INFRASTRUCTURE IN EUROPE



## LG Air Conditioning Academy

LG has set up 20 official air conditioning academies in Europe, teaching much needed skills to thousands of current industry professionals including installers, consultants, designers, sales staff and service technicians. The academy program is being used to share expertise and educate these HVAC experts by providing a cutting-edge technical experience with the newest and most advanced technologies and equipments. Moreover, as LG's entire product range is installed on site, professionals can be trained in a realistic way that offers them the chance to experience the latest products first-hand.



## LG Energy Lab in Europe

Committed to meet all requirements regarding energy efficiency and environmental demands, LG has invested in its own testing facility named the LG Energy Lab. LG Energy Lab is an innovative site dedicated to commercial and residential products for heating, ventilation and the latest energy efficient air conditioning solutions. Also as a showcase, LG Energy Lab is equipped with complete monitoring and control systems. The performance of all products will be tracked and analyzed by a team of Research and Development engineers based in France and Korea, ensuring efficiency and reliability during the whole product lifecycle.



## European Air Conditioning Distribution Center

LG's European Air Conditioning Distribution Center is located in Tilburg, the Netherlands. Supplying and delivering products all over Europe, this distribution hub has contributed to smooth and rapid delivery, direct shipping for smaller orders and delivery tailored to air conditioners. The hub tries to manage inventory efficiency by taking advantage of LG EU's established inventory pool.



# LOCATION & ADDRESS

Subsidiary	Country	Office Address	Contact Point
EUROPE	LGEAG	• Austria • Switzerland <b>LG Electronics Deutschland GmbH Zweigniederlassung Österreich</b> Guglgasse 15/3A, A-1110, Vienna, Austria (3rd Floor, Office Campus Gasometer)	Erhart Kurz erhart.kurz@lge.com
	LGEBN	• Belgium • Netherlands • Luxembourg <b>LG Electronics Benelux</b> Krijgsman 1, 1186 DM Amstelveen The Netherlands	Richard De Waal richard.dewaal@lge.com
	LGE CZ	• Czech • Slovakia <b>LG Electronics Polska Sp. Z o.o., odštěpný závod</b> Českomoravská 2420/15a, 190 93 Praha 9, Czech Republic	Jonghyun Lee jonghyun3.lee@lge.com
	LGEDG	• Deutschland <b>LG ELECTRONICS Deutschland GmbH</b> Alfred-Herrhausen-Allee 3-5, D-65760 Eschborn	Andreas Gelbke andreas.gelbke@lge.com
	LGEES	• Spain <b>LG Electronics Spain</b> C/ Chile nº 1   Las Rozas CP: 28230 Madrid   SPAIN	Juan Manuel juanmanuel.gonzalez@lge.com
	LGEFS	• France <b>LG Electronics France (Villepinte)</b> Paris Nord II-117, avenue des Nations - BP 59372 Villepinte, 95942 Roissy CDG Cedex, France	Johann Roy johann.roy@lge.com
	LGEHS	• Greece <b>LG ELECTRONICS HELLAS S.A.</b> 1 Ethnarhou Makariou str, Delta Paleo Faliro, GR17501, Paleo Faliro, Greece	Ioannis Barakos yiannis.barakos@lge.com
	LGEIS	• Italy <b>LG Electronics Italia Spa</b> Via Aldo Rossi 4 - 20149 Milano, Italy	Jianluca Figini gianluca.figini@lge.com
	LGEMK	• Hungary • Croatia • Bosnia • Serbia • Bulgaria • Macedonia • Kosovo • Montenegro • Albania • Slovenia <b>LG Electronics Magyar Kft.</b> H-1097 Budapest, Könyves Kálmán krt. 3/a.	Sinisa Trifunovic sinisa.trifunovic@lge.com
	LGEPL	• Poland • Latvia • Lithuania • Estonia <b>LG Electronics Polska Sp. z o.o.</b> ul. Wołoska 22, 02-675 Warszawa	Jaroslaw Postaleniec jaroslaw.postaleniec@lge.com
	LGEPT	• Portugal <b>LG Electronics SA Portugal</b> Taguspark-Av. Jacques Delors n.3, Ed. Inovação I corpo 1, 2740-122 Oeiras, Portugal	Vitor Ferreira vitor.ferreira@lge.com
	LGERO	• Romania <b>LG ELECTRONICS ROMANIA</b> Baneasa Business Center, 5-th floor, 1-st district, 013682, Bucharest	Adrian Pop adrian.pop@lge.com
	LGEUK	• United Kingdom • Sweden • Denmark • Finland • Norway <b>LG Electronics UK</b> Velocity 2, Brooklands, Weybridge, KT13 0SL, UK	Hugo Lambourn hugo.lambourn@lge.com