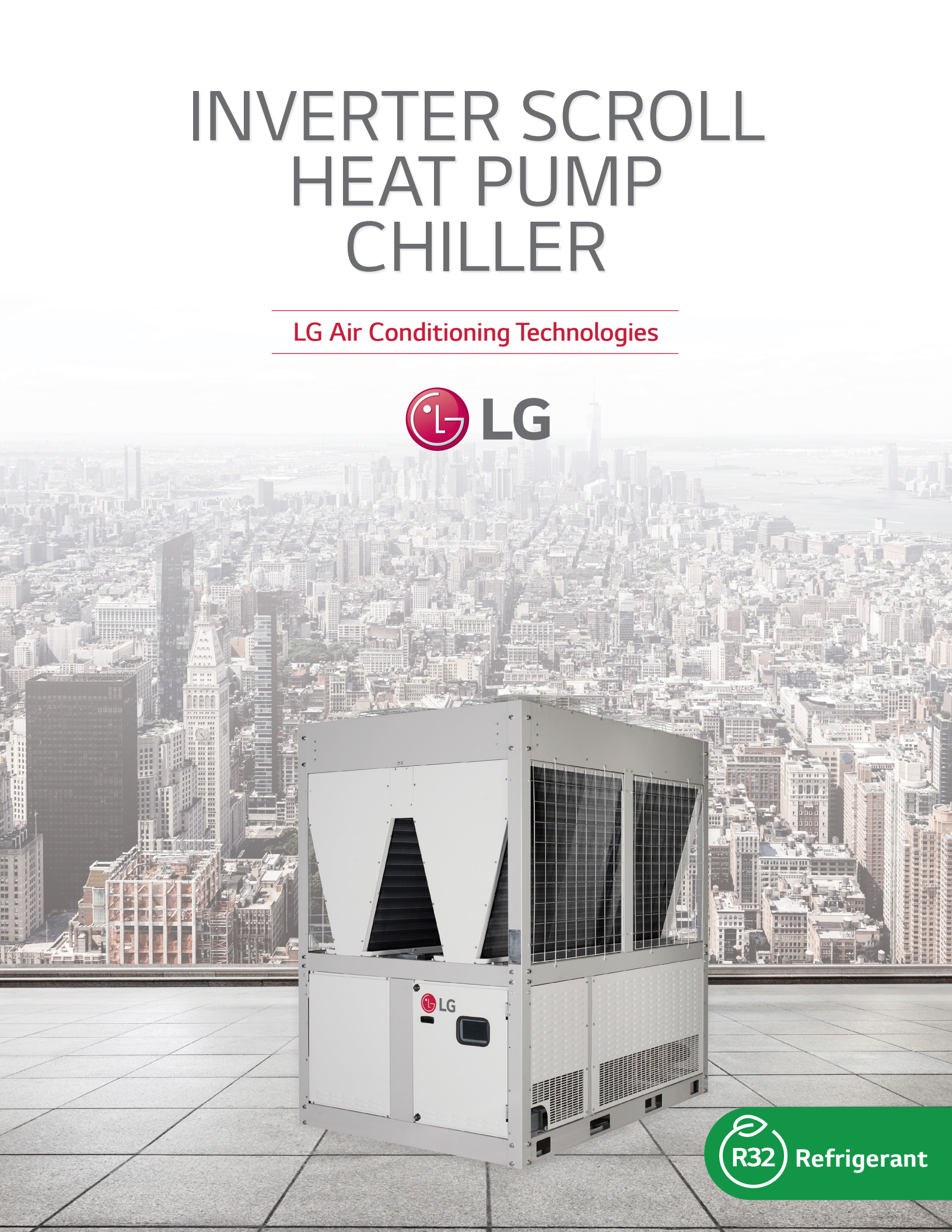
INVERTER SCROLL HEAT PUMP CHILLER

LG Air Conditioning Technologies



WHY INVERTER SCROLL HEAT PUMP CHILLER?

The LG Inverter Scroll Heat Pump Chillers are state-of-the-art, self-contained automatic refrigerating units crafted with the latest engineering components for compactness and efficiency. Each unit has several air-cooled condensers with built-in sub-cooler sections, along with two or more hermetically sealed inverter scroll compressors that are easy to access, an evaporator that works efficiently, and electronic expansion valves. With its cutting-edge design, the Inverter Scroll Heat Pump Chillers deliver unparalleled performance and reliability, making them ideal for a range of industrial and commercial applications.

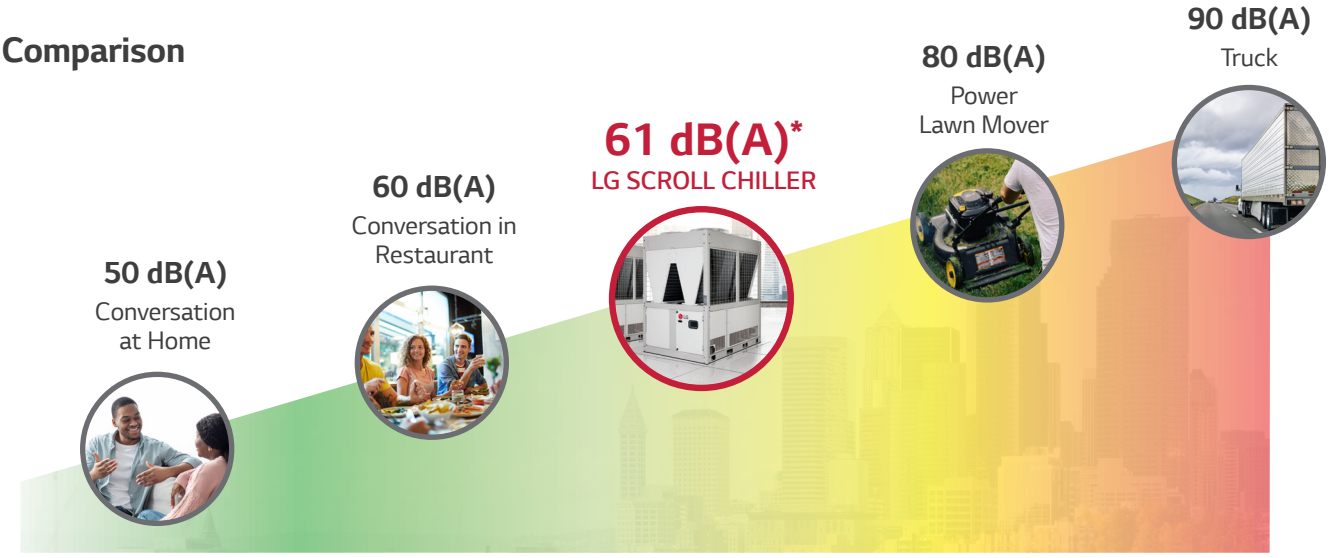
Line-up

Tons		17	20	33	40	50	60
Heat Pump Model KCHH***V(H)BAB							
Capacity	Cooling (kBtuh/h)	194	222	389	444	584	666
	Heating (MBH)	214.5	250.3	429.0	500.6	643.6	750.9

Low Noise Level

Lower noise provides a quieter, more comfortable environment.

Noise Comparison



*LG 60 TON Inverter Heat Pump Chiller Sound Pressure at 30 Feet, individual unit. Sound Power Tested per ANSI/AHRI Standard 370-2015 (Based on individual systems).
LG Sound Pressure Values provided based on Q=2 180 degree profile: $L_p = L_w - 10 \log [Q / (4\pi r^2)]$
Handbook for Environmental Acoustics James P. Cowan, 1994.

APPLICATIONS

The compact design, low noise, and versatility of the LG Inverter Scroll Heat Pump Chiller is ideal for applications such as, but not limited to, the following:

4-Pipe Systems: Provides heating and cooling as well as cooling and dehumidification.

Data Centers: Reduces the size of emergency power generators and electrical infrastructures.

Electrification & Decarbonization: Effective replacement for traditional gas and oil heating systems.

Ice Rinks: Ideal for ice production and maintaining the facility environment.

Museums & Schools: Ensures tight temperature control and operates with very low sound.

Process Cooling: Suitable to provide cooling or heating needs for industrial, food, or product machines and processes.

Secondary Low Temperature Loop: Ideal for use in medical procedure rooms when primary loop chilled water temperature is too high.

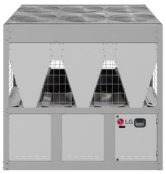
Technology and Science: Ideal for marine aquariums and pharmaceutical applications.

Water Source Systems (68°F to 88°F): Primary loop as a replacement for boilers, cooling towers, or both.

INVERTER SCROLL HEAT PUMP CHILLER

R32 208-230V





Inverter Scroll Heat Pump Chiller		Unit	KCHH017VDGC	KCHH020VDGC	KCHH033VDGC	KCHH040VDGC	KCHH050VDGC	KCHH060VDGC
Power		Phase, Lines, V, Hz	3, 3, 208-230, 60					
Capacity	Cooling	RT	16.2	18.5	32.4	37	48.7	55.5
		kBtuh/h	194	222	389	444	584	666
	Heating	MBH	214.5	250.3	429.0	500.6	643.6	750.9
Input Power	Cooling	kW	17.8	20.8	35.6	41.7	53.5	62.5
	Heating	kW	17.4	20.8	34.7	41.6	52.1	62.3
Efficiency	Cooling	EER (btuh/W)	10.92	10.65	10.92	10.65	10.92	10.65
	Heating (120°F LWT,15 Δ, 47 F)	COP (W/W)	3.62	3.53	3.62	3.53	3.62	3.53
AHRI 550-590 Cooling Performance and Rating		IPLV (btuh/W)	20.13					
Sound Power	Cooling	dB(A)	83	83	86	86	87	88
Sound Pressure 30'	Cooling	dB(A)	51	56	59	60	61	61
Sound Pressure 5'	Cooling	dB(A)	69	71	72	74	74	76
Sound Power	Heating	dB(A)	83	83	86	86	87	88
Sound Pressure 30'	Heating	dB(A)	56	56	59	59	61	61
Sound Pressure 5'	Heating	dB(A)	69	71	72	74	74	76
Compressors	Type: Inverter Scroll	EA	2	2	4	4	6	6
	PVE Oil Charge Each	OZ/EA	33.8					
Refrigerant	Type		R32					
	Amount of Charge EA Circuit	lbs/EA	(10.4 x 2)	(10.4 x 2)	(10.4 X4)	(10.4 x 4)	(10.4 x 6)	(10.4 x 6)
	Metering		2000 Step Electronic Expansion Valve					
Condenser Coils	Coated Aluminum Fin and Tube	10,000 HRS ASTMB-117	2	2	4	4	6	6
Evaporator	Type: Stainless Brazed Plate	EA	1	1	2	2	3	3
	Pressure Drop	ftAg	6.23/4.52	7.15/5.31	6.23/4.52	7.15/5.31	6.23/4.52	7.15/5.31
	Operating Maximum Pressure (Refrigerant/Water)	psi	597/142					
	Refrigerant Volume (EA.)	ft³	2 x (0.18)	2 x (0.18)	4 x (0.18)	4 x (0.18)	6 x (0.18)	6 x (0.18)
	Cooling Water Flow (10F Delta)	GPM	38.9	44.4	77.8	88.7	116.7	133.1
	Cooling Water Flow (Min-Max)	GPM	19.4 - 97	22.2 - 111	38.8 - 194	44.4 - 222	58.2 - 291	66.6 - 333
	Heating Water Flow (15F Delta)	GPM	28.6	33.4	57.2	66.7	85.8	100.1
	Heating Water Flow (Min-Max)	GPM	18.4 - 107.3	18.7 - 125.1	36.9 - 214.5	37.3 - 250.3	55.4 - 321.8	56 - 375.4
	Inlet/Outlet Water Connection	inches/flange	2"/150 lb	2"/150lb	2 1/2"/150lb	2 1/2"/150lb	2 1/2"/150lb	2 1/2"/150lb
	Total System Water Volume	GL	2.68	2.68	7.91	7.91	14.48	14.48
Fan Motor	Type: Variable BLDC	EA	2	2	4	4	6	6
	No. of Blades per Fan	EA	6					
	Air Flow Rate	CFM	8684					
	Motor Power	W	900					
Weight		lbs	1124	1124	2094	2094	3064	3064
Dimensions	Width	inches	30 1/8	30-1/8	60-5/8	60-5/8	90-13/16	90-13/16
	Height	inches	86-5/8					
	Depth	inches	84-13/16					
Foot Print		ft2/RT	1.09	0.96	1.09	0.96	1.09	0.96
Exterior Panel		Epoxy Powder Coat	Rated at 450 HRS per ASTMB-117					
Remote Monitoring and Control		Type	Optional BACnet Gateway					
Protection Devices	High/Low Pressure	Electronic	Internal					
	Flow Switch	Paddle/ADJ.	Internal					
	Freeze Protection	On/Off Contact Only	Heat Trace Elements and Power by Others					
Supply Water Temperature Range	Cooling	°F	14 - 68					
	Heating	°F	86 - 140*					
Approved Water Delta T	Cooling and Heating	°F	04 - 20					
Ambient Temperature Operational Range	Cooling	°F	5 - 125					
	Heating	°F	-22 - 95					
Guaranteed Load Capacity Range		%	20 - 100					

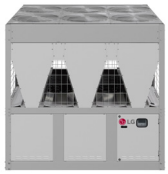
*Lower LWT down to 66°F available upon special configuation.

1. Due to our policy innovations some specification may be changed without prior notification.
2. AHRI 550-590 Cooling Capacity Conditions: 95F Ambient Air, 54°F EWT and 44°F LWT.
3. AHRI 550-590 Medium Temp 120°F LWT Heating Capacity Test Condition.
4. Sound Power Tested per ANSI/AHRI Standard 370-2015 (Based on individual systems)
5. Sound Pressure Values provided based on Q=2 180 degree profile: $L_p = L_w - 10 \log [Q / (4\pi r^2)]$
6. The KCHH***VDGC models are certified by AHRI to AHRI Standard 550-590.
7. For the latest version of Certified LATS ISC Selection Software go to, www.ahridirectory.org
8. Heating Performance Tested per the AHRI 550-590 procedure. Heating Performance is not in certification scope of AHRI 550-590.
9. This product contains (R32, GWP:677t-CO2 eq = F-gas (kg) x GWP / 1000)

INVERTER SCROLL HEAT PUMP CHILLER

R32 460V





Inverter Scroll Heat Pump Chiller		Unit	KCHH017HDGC	KCHH020HDGC	KCHH033HDGC	KCHH040HDGC	KCHH050HDGC	KCHH060HDGC
Power		Phase, Lines, V, Hz	3, 3, 460, 60					
Capacity	Cooling	RT	16.2	18.5	32.4	37	48.7	55.5
		kBtuh/h	194	222	389	444	584	666
	Heating	MBH	214.5	250.3	429.0	500.6	643.6	750.9
Input Power	Cooling	kW	17.8	20.8	35.6	41.7	53.5	62.5
	Heating	kW	17.4	20.8	34.7	41.6	52.1	62.3
Efficiency	Cooling	EER (btuh/W)	10.92	10.65	10.92	10.65	10.92	10.65
	Heating (120°F LWT,15 Δ, 47 F)	COP (W/W)	3.62	3.53	3.62	3.53	3.62	3.53
AHRI 550-590 Cooling Performance and Rating		IPLV (btuh/W)	19.46					
Sound Power	Cooling	dB(A)	83	83	86	86	87	88
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Compressors	Type: Inverter Scroll	EA	2	2	4	4	6	6
	PVE Oil Charge Each	OZ/EA	33.8					
Refrigerant	Type		R32					
	Amount of Charge EA Circuit	lbs/EA	(10.4 x 2)	(10.4 x 2)	(10.4 X4)	(10.4 x 4)	(10.4 x 6)	(10.4 x 6)
	Metering		2000 Step Electronic Expansion Valve					
Condenser Coils	Coated Aluminum Fin and Tube	10,000 HRS ASTMB-117	2	2	4	4	6	6
Evaporator	Type: Stainless Brazed Plate	EA	1	1	2	2	3	3
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	Air Flow Rate	CFM	8684					
	Motor Power	W	900					
Weight		lbs	1149	1149	2143	2143	3135	3135
Dimensions	Width	inches	30-1/8	30-1/8	60-5/8	60-5/8	90-13/16	90-13/16
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INVERTER COMPRESSOR TECHNOLOGY

As the core technology of the Inverter Scroll Heat Pump Chiller, the inverter compressor of Multi V™ 5 boasts efficiency and durability, designed based on the unique technology and innovation of LG Air Conditioning Technologies.

Convenience

- Low vibration and noise level
- Silent operation function setting
- 5 inch HMI touch controller with various functions
- Compact size

High Efficient Inverter Technologies

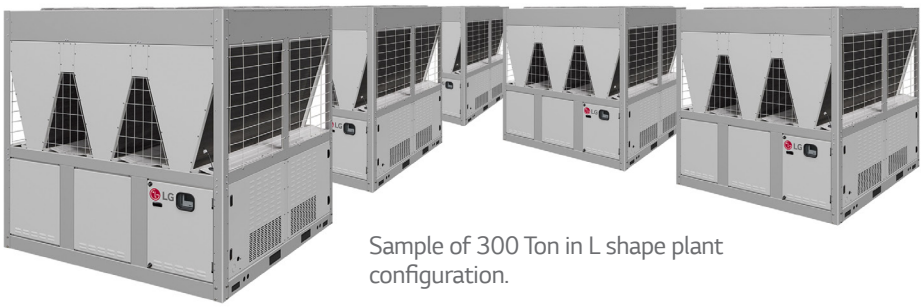
- Fully driven Inverter Scroll Compressor
- Vapor Injection with wide operating range via two-stage compression
- Wide Operation Range from 30 to 120 Hz with improved part load efficiency at all operation ranges
- Compressor efficiency is increased through HiPOR™ application by recovering oil to the compressor directly

Reliability & Stability

- Continuous heating minimizes the decrease of water outlet temperature during defrosting for multi circuit model
- If one compressor or one cycle needs to be troubleshooted or repaired, backup operation helps whole cycle to operate continuously
- Quick maintenance using black box function
- Prevent compressor damage due to excessively compressed refrigerant, more efficiently than 4 by-pass valves
- Corrosion resistance 'Black Fin'
- PEEK (Polyetheretherketone) bearing design increases operation range and durability

Compact Size Offers Flexible Installation

The modular design of LG Inverter Heat Pump Chillers enables customized assembly based on project requirements, providing engineers with a cost-effective and properly sized solution that overcomes the limitations of fixed-capacity, fixed-frame chillers.

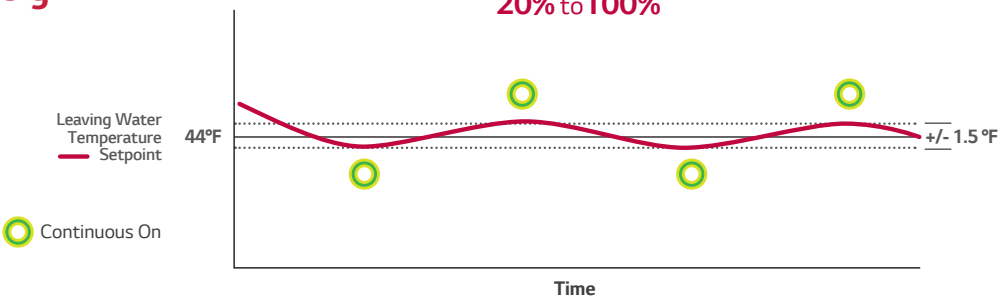


Sample of 300 Ton in L shape plant configuration.

High Energy Efficiency Critical Load Operation

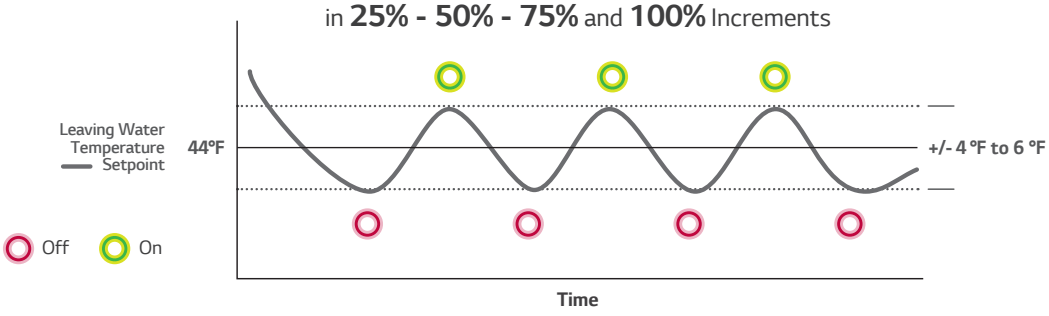
LG inverter scroll compressors with Multi V™ technologies improve energy efficiency with 20% - 100% variable capacity available to match the load and eliminate leaving water temperature hunting, providing a 1.5°F degree hysteresis above and below the desired leaving water temperature setpoint.

LG Variable Inverter Scroll Compressor Design



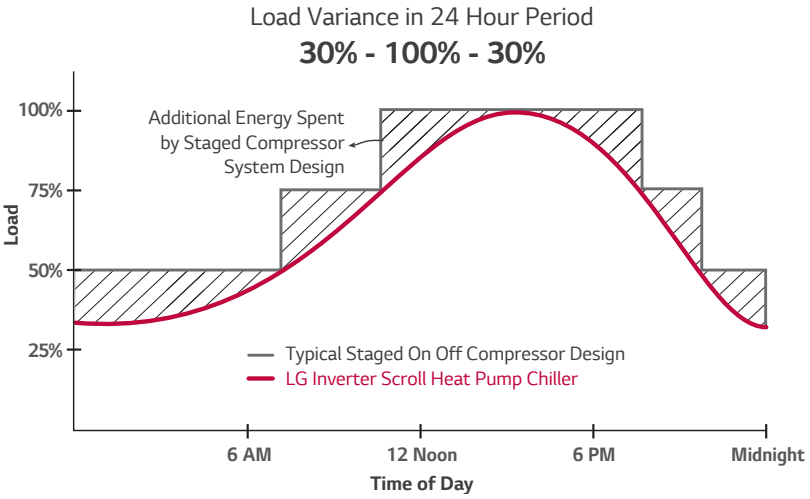
Staged On-Off Capacity Design Systems are often built to match the test procedure of 25% incremental steps, with capacity performance of 25% - 50% - 75% and 100%. Compared to LG's Variable Capacity Design, Staged Designed Systems will over-cool or lag to provide needed capacity, providing a broader variance to the desired Leaving Water Temperature as the load on the chiller increases or decreases.

Typical Staged Compressor System Design



The LG Advantage

The LG Inverter Scroll Heat Pump Chiller adapts to fluctuating daily cooling and heating needs, surpassing the efficiency of the staged compressor system design. While staged chillers can use bypass circuits to moderate the leaving water temperature, they still consume power in fixed 25% to 100% increments. LG's system adjusts the compression cycle capacity to the actual load, cutting out the inefficiency of staged operation and reducing energy consumption.



LG Electronics USA, Inc.
Air Conditioning Technologies
4300 North Point Parkway, Alpharetta, GA 30022

www.lghvac.com

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