



Trustworthy Business Partner

LG Data Center Thermal Management Solutions



LG Electronics
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Developing advanced cooling technologies optimized for next-generation AI data centers

Driven by the rapid advancement of AI technologies, the data center construction market is expected to grow continuously over the next decade and possibly beyond.

AI data centers, with their intensive usage of high-powered chips, place greater demand on electricity and water resources and produce more heat than conventional data centers. For these reasons, energy-efficient thermal management solutions have emerged as critical infrastructure components for AI data centers - essential for keeping their servers at the optimal temperature and for minimizing their environmental impacts.

Following this trend, LG introduced high efficiency DLC(Direct Liquid Cooling) solutions, such as Cold Plate and CDU. The system attaches directly to server chips, using a liquid coolant to absorb the heat and channel it through a closed-loop system managed by the CDU(Coolant Distribution Unit). The CDU delivers precise temperature and flow, is equipped with an AI virtual sensor for full redundancy, and its hot-swap design makes maintenance easy.

To create the next generation of data center cooling solutions, LG opened a dedicated AIDC testing facility earlier this year at its LG AI Data Center HVAC Solution Lab. The lab is capable of conducting real-world simulations of data center environments, helping LG fine-tune its systems to meet evolving customer and environmental demands.

Experience unparalleled LG Data Center Cooling Solutions that present new paradigms and provide optimal systems in line with rapidly changing data center environments such as PUE, WUE, new refrigerant, and high power chips.



Optimizing Cooling Solutions



AI-Powered Thermal Management



New Paradigm

ABOUT LG ELECTRONICS

Data Center Cooling,
Redefined by

LG

LG Electronics Chiller has a history of over 50 years since 1967 and is the number one chiller company in Korea. In 1983, it exported centrifugal chillers to nuclear power plants, and in 1998, it produced Korea's first R-134a centrifugal chiller. In 2012, it obtained AHRI certification, and in 2017, it developed a magnetic bearing compressor with its own technology. In 2024, it supplied high-lift chillers for immersion cooling as a customized solution. In 2025, it expanded Hybrid Direct Liquid Cooling lineup for AI Data Centers.

Innovators For The Future

1995~

High Growth Period

1967~

1967

Start LG chiller business

1970

R-11 centrifugal chiller production

1975

Single effect absorption chiller
(steam type) production

1978

Production of AHU & FCU

1983

First export of centrifugal chiller
for nuclear power plant

Double effect absorption chiller
(direct fire type) production

1997

Established factory in Qingdao, China

1998

Production of Korea's first R-134a centrifugal chiller

2006

High-efficiency direct-fired
absorption chiller development

2007

2-stage centrifugal chiller development

2008

2,500 RT centrifugal chiller development
(single compressor)

2008

Starting chiller business in the Middle East
(Motor City, 80,000 RT, 32 units)



Leap To Become A Global Company

2012~



2012

Acquisition of AHRI certification

2013

World's highest level (COP 6.7@ AHRI)
development of 2-stage centrifugal chiller

World's highest level of efficiency
Double effect direct fired absorption chiller
development (COP 1.36)

2014

Korea's first development of high-efficiency
modular centrifugal chiller (COP 6.4, 2,000 RT)

2015

World's first air-bearing
centrifugal chiller development

2017

Magnetic bearing technology development of inverter
centrifugal chiller

2021

Supply of air-cooled centrifugal chillers (remote condenser type)
for district cooling in the Middle East (total 10,000 RT)

2022

HFO refrigerant (R-1233zd)
development of oil-free inverter centrifugal chiller

2024

Supply of centrifugal chiller for world's largest level of data
center (total 259,000 RT)

2025

Expansion of hybrid direct liquid cooling line-up
(Air-cooled free-cooling chiller, coolant distribution unit,
fan wall unit, data center cooling manager, etc.)

2025~



ABOUT LG ELECTRONICS

Manufacturing Factory

There are four factories that produce data center-related products. The Pyeongtaek and Qingdao factories are chiller production bases that produce centrifugal chillers, absorption chillers, and screw chillers. The Pyeongtaek factory has established an AI Data Center HVAC Solution Lab to enable various performance tests. The Changwon factory produces Coolant Distribution Units for Direct Liquid Cooling, air-cooled inverter scroll chillers, and air conditioners including VRF. The Hwaseong factory produces CRAH and AHU including Fan Wall Units, and operates a test bed to verify CRAH performance.



Pyeongtaek factory in Korea



Qingdao factory in China



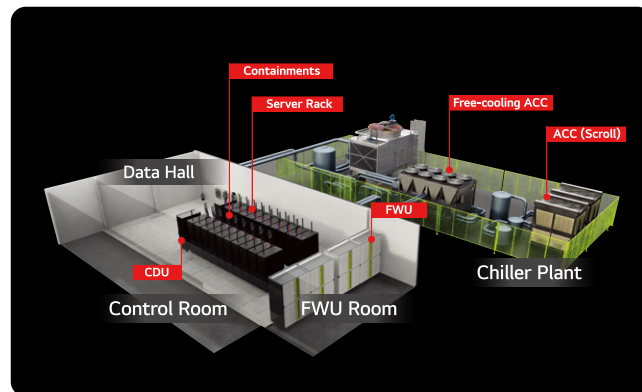
Changwon factory in Korea



Hwasung factory in Korea

LG AIDC HVAC Solution Lab

LG AI Data Center HVAC Solution Lab is a 1.5 MW AI-dedicated test lab, with a hybrid system that applies DLC to 80% of the IT load with CDU and Cold Plate, and air-cools the remaining 20% with FWU. The heat source is an free-cooling ACC (Air-cooled Chiller) and a closed type cooling tower for DLC, and an ACC (Air-cooled Chiller) for FWU. The entire system is equipped with an integrated control system, allowing for various tests on various IT load conditions and scenarios.



AHRI Test Facility

We have AHRI certified WCC (Water-cooled Chiller) and ACC (Air-cooled Chiller) Test Facility, providing performance verification according to international standards. WCC Test Facility can test up to 6 units simultaneously, and the maximum capacity is 3,000 RT. ACC Test Facility can test up to 650 RT. Customers can visit for FWT (Factory Witness Test) or proceed with real-time monitoring online.



WCC Test Facility



ACC Test Facility

Global Management System

The entire process from design, purchasing, and production is managed through international management systems such as ISO 9001 (Quality Management System), ISO 14001 (Environment Management System), and ISO 45001 (Health and Safety Management System).



Global Certification

We have an AHRI certified Model Selection Program and Test Facility, and have received the Performance Award from AHRI for 8 consecutive years (2018 - 2025). We have acquired ETL / UL / CE safety standards and ASME pressure vessel standards.



Global SVC Network

LG Electronics provides SVC directly in 13 global regions through its service subsidiary Hi-M Solutek. There are over 1,200 certified service engineers globally, and we support rapid service response by setting up service points near the site to improve data center availability.



WHY LG DATA CENTER THERMAL MANAGEMENT SOLUTIONS

INNOVATION

Core Technology

(Compressor, Inverter, EC Fan)

CREATIVITY

Customized Design

(Chiller, FWU, Cold Plate, CDU, DC CPM, DCCM)



INTEGRATION

One Stop Solution

(LG AIDC HVAC Solution Lab)

RELIABILITY

Global Certification

(AHRI, ETL, UL, CE, ASME, ISO, etc)



Chiller Solution

High Efficiency, Low GWP Refrigerant, Integrated Free-cooling Solution

Water-cooled Chiller

- **Magnetic Bearing Centrifugal**
400 ~ 2,000 RT (R-1233zd)
180 ~ 1,880 RT (R-513A)
Inverter Oil-free



- **Centrifugal**
180 ~ 2,800 RT (R-513A)
Inverter



- **Absorption**
90 ~ 2,400 RT
Hot water Steam Hybrid



Air-cooled Chiller

- **Centrifugal**
320 ~ 500 RT
Free-cooling
Inverter EC Fan



- **Screw**
156 ~ 470 RT
Free-cooling
Inverter EC Fan



- **Scroll**
18 ~ 63 RT
Inverter



Air Cooling Solution

High Efficiency EC Fan, Module Type

- **CRAH (Fan Wall Unit)**
40,000 ~ 100,000 CMH
EC Fan Inverter Oval Coil



Liquid Cooling Solution

For High Power Chip, DLC Cooling Solution

- **CDU**
650 kW, 1.4 MW (2Q 2026)
Virtual Sensor
ALS Tech. Inverter



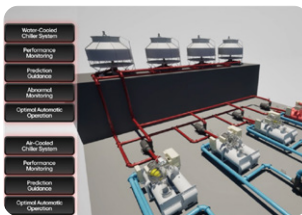
- **Cold Plate**
Customized design
Skived Fin Brazing
Optimized Design



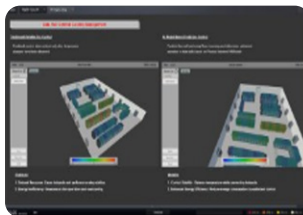
Cooling System Management

Optimized Control For High Equipment Performance And Efficiency Based On Reliability

- **DC CPM**
Chiller, Pump, CDU, FWU
driving optimization,
Improve stability
AI control
3D Visualization & Monitoring



- **DCCM**
3D engineering,
dynamic simulation,
predictive control,
fault diagnostics
Digital Twin (Modeling & Simulation)



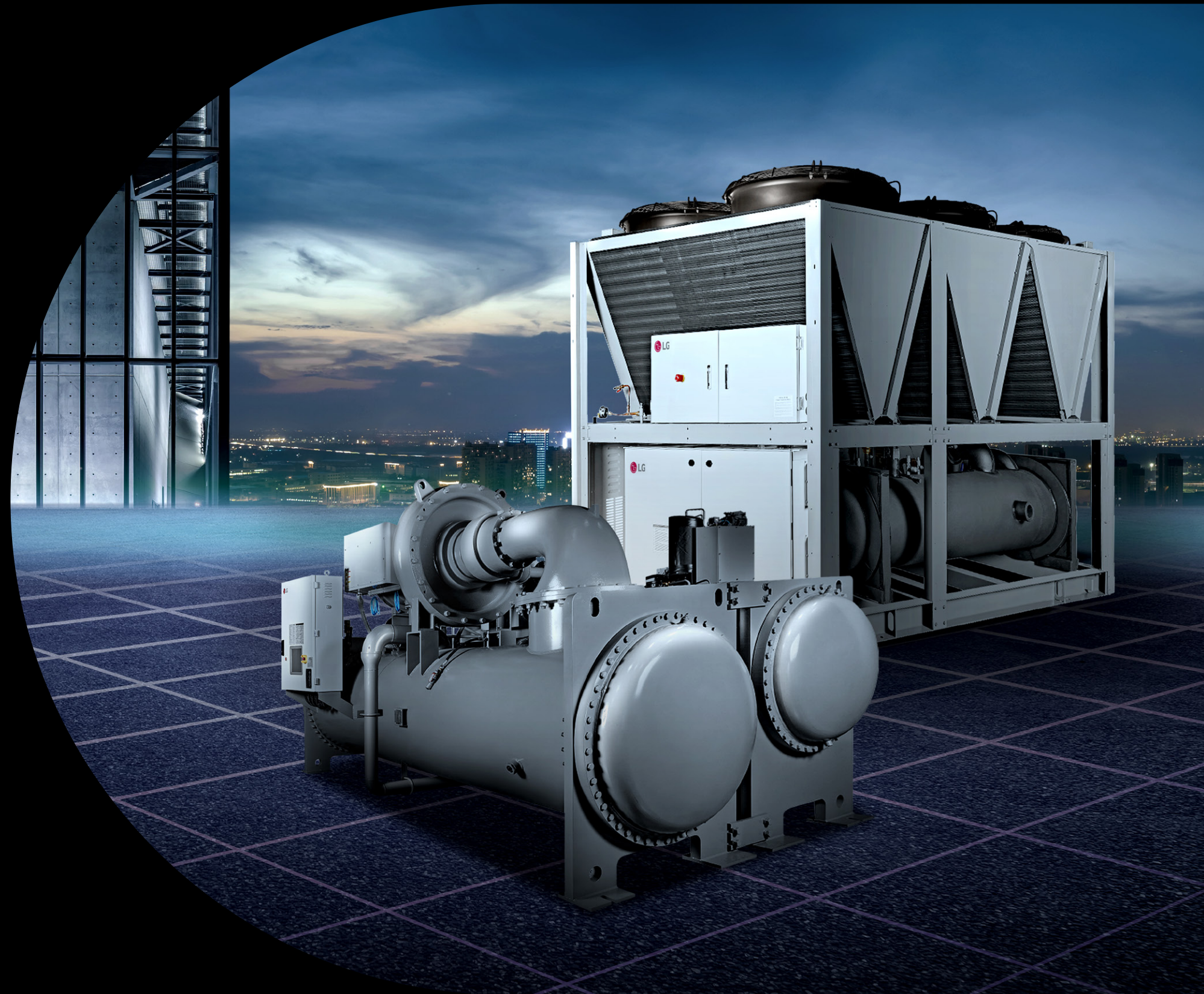
01 CHILLER SOLUTION

- **Water-cooled Chiller**

- Water-cooled Magnetic Centrifugal Chiller (R-1233zd)
- Water-cooled Magnetic Centrifugal Chiller (R-513A)
- Water-cooled Oil Type Centrifugal Chiller (R-513A)

- **Air-cooled Chiller**

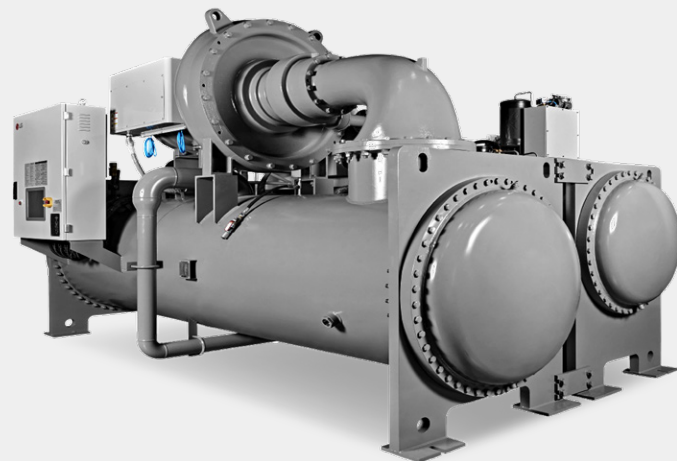
- Air-cooled All Inverter Screw Chiller (R-513A)
- Air-cooled All Inverter Screw Free-cooling Chiller (R-513A)



WATER-COOLED CHILLER

Water-cooled Magnetic Centrifugal Chiller (R-1233zd)

The water-cooled magnetic centrifugal chiller is equipped with a low-voltage inverter as standard, and features superior energy efficiency and easy maintenance through direct drive and oil-free operation. It uses environmentally friendly low-pressure refrigerant R-1233zd, so it has low GWP (1). 2 comp. series counter flow design allows design up to 2,000 RT.



KEY FEATURES



Excellent Efficiency



Reliability



Environment

LINE UP

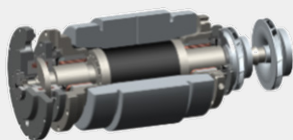
Model	[usRT]					
	400	600	800	1,000	1,500	2,000
 R-1233zd Magnetic Centrifugal Chiller (DCWFL)	400	1 Comp.		1,000		
			800	2 Comp.		2,000

CORE TECHNOLOGY

High-efficiency Performance with Magnetic Bearings

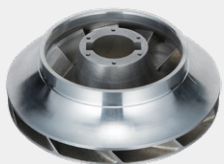
The magnetic bearing system eliminates the oil induced decrease in heat exchange efficiency, and the high-efficiency impeller and falling film type evaporator enhance part-load efficiency. Compared to R-134a oil-free centrifugal chillers, the COP improves by 8.7%, and the IPLV improves to 7.5% under part-load conditions.

Magnetic Bearing



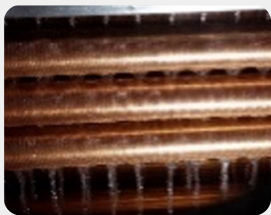
- No contact magnetic bearing
- No oil related parts
- Improve part load efficiency

High Efficiency Impeller



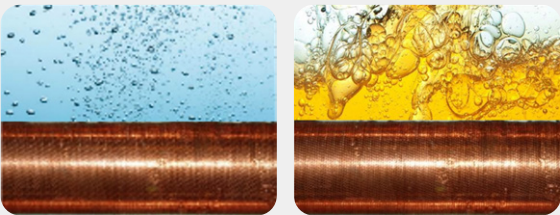
- Integral structure of blade and shroud
- No gas leak during compressing
- Low noise impeller

Falling Film Type Evaporator



- Improved heat transfer coefficient

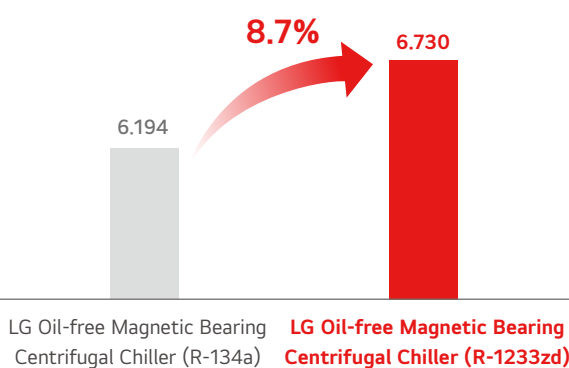
Oil-free



- Improve HEX efficiency

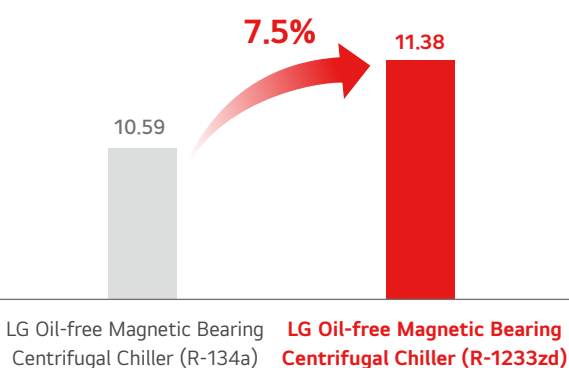
Full Load Efficiency

COP



Partial Load Efficiency

IPLV



※ Based on 700 RT, chilled water temp. 12 / 7°C (53.6 / 44.6°F) and cooling water temp. 30 / 35°C (86 / 95°F) conditions

CORE TECHNOLOGY

Enhanced Reliability

High reliability has been ensured by applying core technologies to magnetic bearings, inverters, compressors, impellers, and evaporators as shown below.

Magnetic Bearing



- Magnetic bearing & control technology
- Rotor vibration control / gap (Rotor vs Bearing) control
- Motor shaft levitation using magnetic field
- Reduction of bearing heat loss (Oil: 60℃, Magnetic: 40℃)

Dedicated Inverter



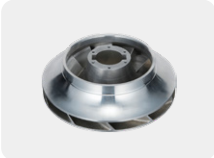
- Voltage and frequency characteristics optimized for chiller operation
- Refrigerant cooling method (improved cooling efficiency compared to water cooling)
- Installation space savings by attaching to the main body

Direct Drive Compressor



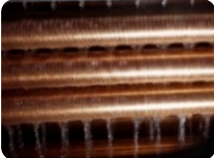
- Rotation speed control through frequency control (0 ~ 300 Hz)
- Reduced bearing and gear losses

Shroud Impeller



- Impeller blade and shroud integrated
 - No leakage when compressed
 - Low noise

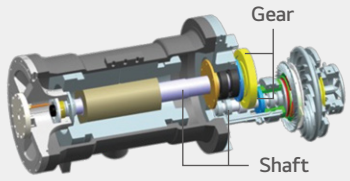
Falling Film Evaporator



- Applying a falling film evaporator to improve heat transfer coefficient and reduce the amount of refrigerant
- Applying our own refrigerant distribution device (patent registered)

Reliability and efficiency have been improved through direct drive through oil-free technology and increased speed of the inverter.

Conventional (Lubricant)



Gear

2

Oil Pump

1

Shaft

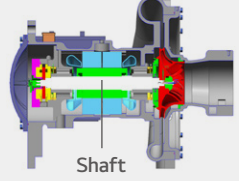
2

Bearing

4

- The axes of the impeller and the motor are different
→ Gears are required for power transmission.
- An oil pump is required for oil circulation.

Magnetic Bearing



Gear

0

Oil Pump

0

Shaft

1

Bearing

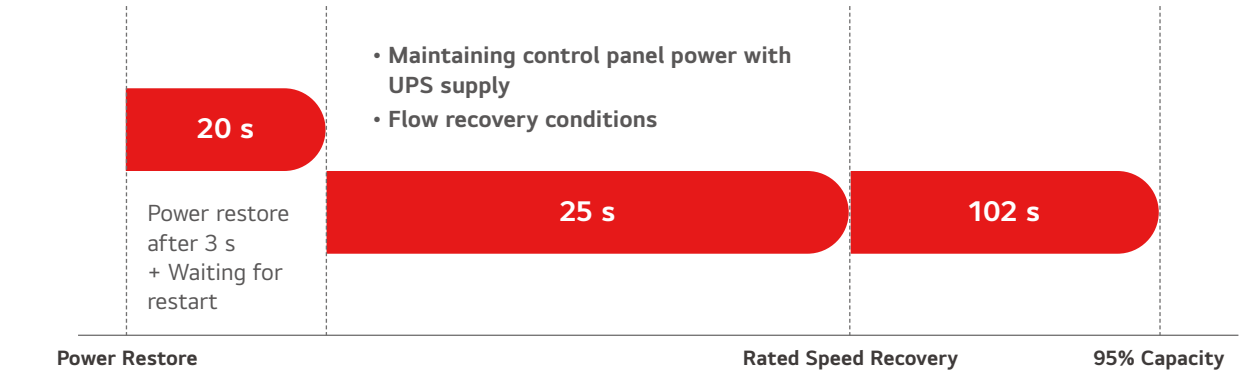
4

- Simple structure with direct drive between impeller and motor
→ Improved reliability ↑
- Deleted parts related to oil circulation
→ Improved efficiency by reducing driving parts ↑

Fast Recovery (Automatic Rapid Restart After Power Restore)

When the Fast Recovery is applied, the rated rotation speed is recovered within 45 seconds.

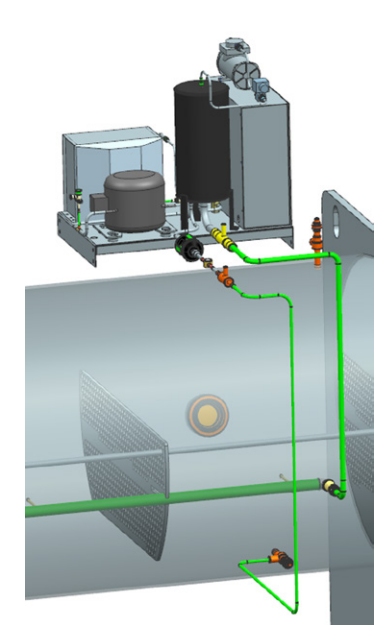
- Control panel power needs to be maintained with UPS, etc.: Control logic is performed by maintaining the control power.
- Oil pre-circulation time is unnecessary due to the application of oil-free magnetic bearings.
- Quick chilled water temperature recovery by applying DGR¹⁾



※ Factory test product: R-1233zd oil-free inverter centrifugal chiller
(Based on 2 comp. series counter flow, 1,600 RT and chilled water temp. 28 / 20℃ (82.4 / 68°F) condition)
※ The load response speed varies depending on the power outage period, load, and on-site conditions.
1) DGR: Discharge Gas Recirculation

Smart Mode Purge System

It effectively removes non-condensable gas on its own according to the amount of non-condensable gas, thereby preventing degradation of chiller performance.



Mode	Operation Method	Recommended Use
Smart	Predictive operation (considering vacuum pump operating time and leakage amount)	Periodically run & stop
On	Always operation	Initial installation and long-term non-use
Off	Always stop	-
Auto	Driving while the compressor is running	General operation

SPECIFICATIONS

Model Name (DCWFL**)			BA	BC	CC	DC
Cooling Capacity		usRT	400	500	700	1,000
Weight	Shipping	kg	11,845	11,971	14,995	20,894
		lb	26,114	26,392	33,058	46,063
	Operating	kg	13,245	13,582	17,152	23,803
		lb	29,200	29,943	37,814	52,477
	Compressor	Type	-	Magnetic Bearing		
No.		EA	1			
Evaporator	Flow Rate	m³/h	218	273	382	545
		gpm	960	1,200	1,682	2,400
	Pressure Drop	kPa	50.01	50.99	62.76	96.11
		ftH₂O	16.73	17.06	21.00	32.15
		Condenser	Flow Rate	m³/h	273	341
gpm	1,200			1,500	2,100	3,000
Pressure Drop	kPa		52.76	53.05	69.04	84.63
	ftH₂O		17.65	17.75	23.10	28.31
	Dimension		Length	mm	4,440	4,440
inch		174.8		174.8	195.0	218.3
Width		mm	2,875	2,875	3,318	3,806
		inch	113.2	113.2	130.6	149.8
Height		mm	2,757	2,757	3,228	3,704
		inch	108.5	108.5	127.1	145.8

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in condenser is 0.044 m²·°C/kW (0.00025 ft² hr °F/Btu), in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Cooling water temperature outlet is 34.61°C (94.3°F), inlet is 29.44°C (85°F)
Chilled water temperature outlet is 6.67°C (44°F), inlet is 12.22°C (54°F)
4. Due to our policy of innovation some specifications may be changed without prior notification.
5. All data in this table is rated in accordance with AHRI Standard 550 / 590.

NOTE

WATER-COOLED CHILLER

Water-cooled Magnetic Centrifugal Chiller (R-513A)

Water-cooled magnetic centrifugal chiller is equipped with a low-voltage inverter as standard, and features superior energy efficiency and easy maintenance through direct drive and oil-free type. It also has a low GWP (573) by applying R-513A refrigerant.



KEY FEATURES



High Efficiency



Stable Operation



Convenient Control

LINE UP

Model	100	200	400	600	800	1,000	1,500	2,000
 R-513A Magnetic Centrifugal Chiller (GCWFL)	180	1 Comp.				940		
			540	2 Comp.				1,880

CORE TECHNOLOGY

High-efficiency Performance with Magnetic Bearings

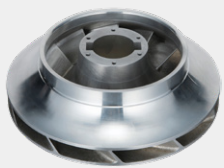
The magnetic bearing system eliminates oil-induced heat exchange efficiency degradation, and the high-efficiency impeller and inverter enhance part-load efficiency. Compared to conventional centrifugal chillers, COP is improved by 5.8%, and under part-load conditions, IPLV and NPLV are significantly improved by 33.6% and 143.1%, respectively.

Magnetic Bearing



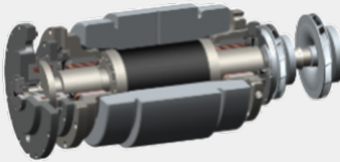
- No contact magnetic bearing
- No oil related parts
- On-line UPS (up to 60 mins)

High Efficiency Impeller



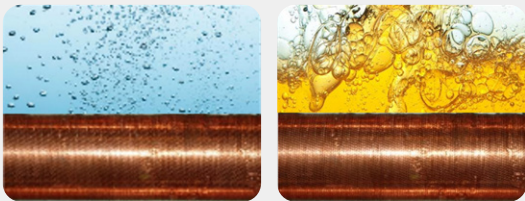
- Integral structure of blade and shroud
- No gas leak during compressing
- Low noise impeller

Inverter Compressor



- Simple structure with direct drive
- Improve part load efficiency

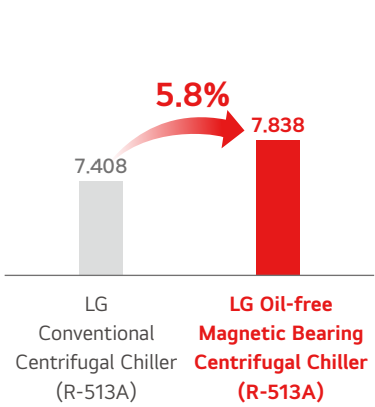
Oil-free



- Improve HEX efficiency

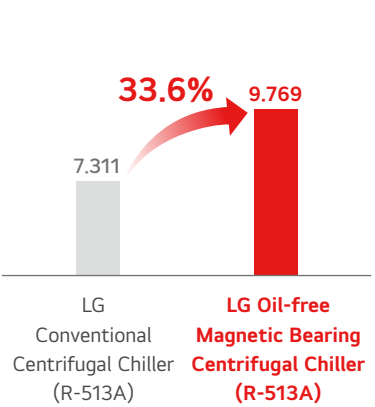
Full Load Efficiency

COP

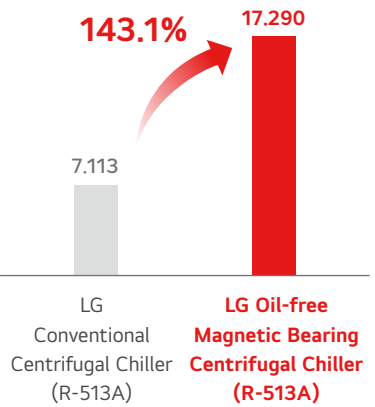


Partial Load Efficiency

IPLV



NPLV

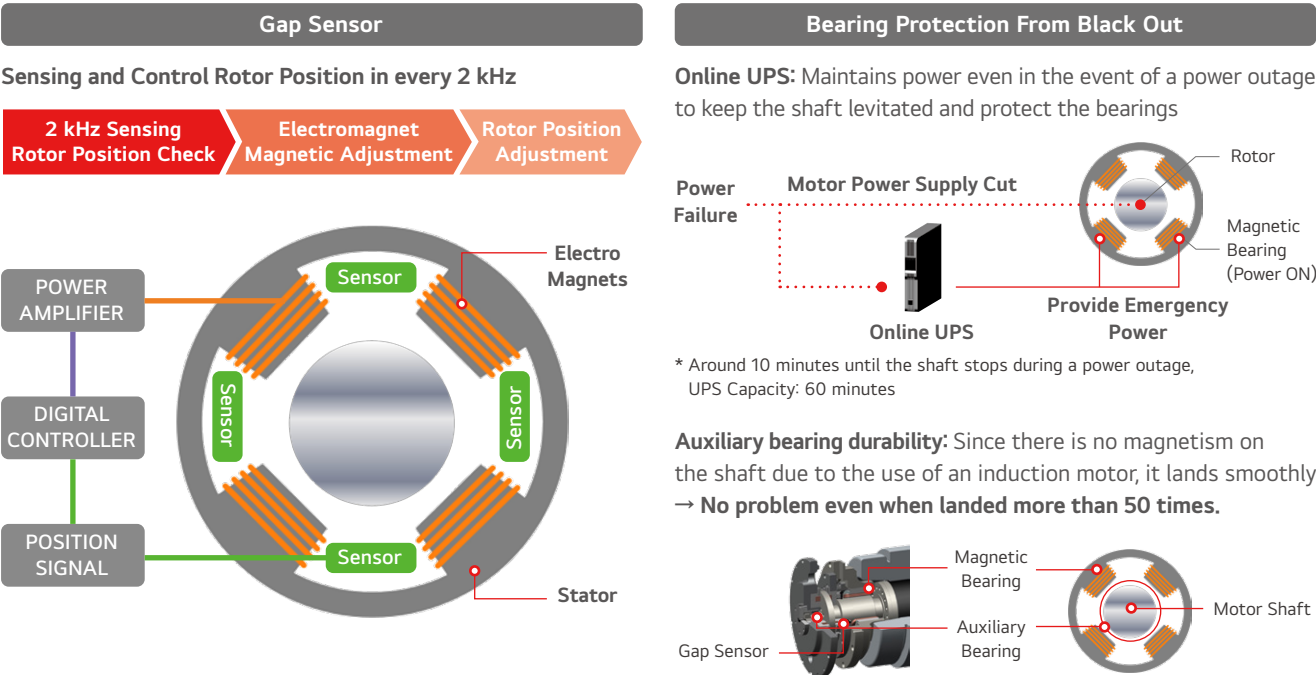


※ Based on 500 RT, chilled water temp. 28 / 20℃ (82.4 / 68°F) and cooling water temp. 35 / 40℃ (95 / 104°F) conditions

CORE TECHNOLOGY

Enhanced Magnetic Bearing Reliability

The reliability of magnetic bearings has been improved through precise control of rotor position through gap sensor technology and online UPS.



SPECIFICATIONS

Model Name (GCWFL**)		AL	AM	AN	AP	BM	BN	BP	CM	CN	CP	
Cooling Capacity	usRT	180	225	245	270	380	425	470	510	550	660	
Weight	Shipping	kg	5,900	6,000	6,000	6,100	8,100	8,200	8,300	11,200	11,100	11,700
		lb	13,007	13,227	13,227	13,448	17,857	18,078	18,298	24,692	24,471	25,794
	Operating	kg	6,700	6,900	7,000	7,000	9,700	9,800	9,800	13,300	13,100	14,000
		lb	14,771	15,212	15,432	15,432	21,384	21,605	21,605	29,321	28,881	30,865
Compressor	Type	-	Magnetic Bearing									
	No.	EA	1									
Evaporator	Flow Rate	m³/h	98	123	134	147	207	232	256	278	300	360
		gpm	432	540	588	648	911	1,020	1,128	1,224	1,320	1,583
	Pressure Drop	kPa	27.50	27.60	32.70	27.70	29.80	30.30	30.10	29.20	28.60	42.00
		ftH₂O	9.20	9.23	10.94	9.27	9.97	10.14	10.07	9.77	9.57	14.05
Condenser	Flow Rate	m³/h	127	158	172	189	260	290	320	348	375	448
		gpm	558	695	757	833	1,143	1,276	1,410	1,531	1,649	1,973
	Pressure Drop	kPa	26.90	29.10	29.10	35.10	29.20	32.60	39.70	27.00	31.30	56.30
		ftH₂O	9.00	9.74	9.74	11.74	9.77	10.91	13.28	9.03	10.47	18.84
Dimension	Length	mm	3,596	3,596	3,596	3,596	3,631	3,631	3,631	3,736	3,736	4,386
		inch	141.6	141.6	141.6	141.6	143.0	143.0	143.0	147.1	147.1	172.6
	Width	mm	2,574	2,574	2,574	2,574	2,430	2,430	2,430	3,331	3,331	3,331
		inch	101.3	101.3	101.3	101.3	95.7	95.7	95.7	131.1	131.1	131.1
	Height	mm	2,040	2,040	2,040	2,040	2,172	2,172	2,172	2,439	2,439	2,439
		inch	80.3	80.3	80.3	80.3	85.5	85.5	85.5	96.0	96.0	96.0

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in condenser is 0.044 m²·°C/kW (0.00025 ft² hr °F/Btu), in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Cooling water temperature outlet is 34.61°C (94.3°F), inlet is 29.44°C (85°F)
 Chilled water temperature outlet is 6.67°C (44°F), inlet is 12.22°C (54°F)
4. Due to our policy of innovation some specifications may be changed without prior notification.
5. All data in this table is rated in accordance with AHRI Standard 550 / 590.

Model Name (GCWFL**)		CQ	DN	DP	AW	BW	CW	CX	DW	
Cooling Capacity	usRT	750	850	940	540	940	1,320	1,500	1,880	
Weight	Shipping	kg	11,700	15,000	15,100	11,700	16,700	26,200	28,100	35,100
		lb	25,794	33,069	33,290	25,794	36,817	57,761	61,950	77,382
	Operating	kg	14,000	18,000	18,200	13,700	20,200	31,900	34,200	44,200
		lb	30,865	39,683	40,124	30,203	44,533	70,327	75,398	97,444
Compressor	Type	-	Magnetic Bearing							
	No.	EA	1		2					
Evaporator	Flow Rate	m³/h	409	463	512	294	512	719	817	1,024
		gpm	1,799	2,039	2,255	1,295	2,255	3,167	3,598	4,510
	Pressure Drop	kPa	65.10	48.20	52.20	78.60	63.40	102.10	128.00	143.60
		ftH₂O	21.78	16.13	17.46	26.3	21.21	34.16	42.82	48.04
Condenser	Flow Rate	m³/h	512	578	639	377	639	895	1,018	1,274
		gpm	2,253	2,545	2,813	1,662	2,811	3,941	4,480	5,611
	Pressure Drop	kPa	91.90	49.10	59.80	93.90	78.50	83.30	108.60	111.50
		ftH₂O	30.75	16.43	20.01	31.41	26.26	27.87	36.33	37.30
Dimension	Length	mm	4,386	4,525	4,525	5,111	5,355	6,456	6,456	7,526
		inch	172.7	178.1	178.1	201.2	210.8	254.2	254.2	296.3
	Width	mm	3,314	3,314	3,314	2,430	3,380	3,490	3,970	4,180
		inch	130.5	130.5	130.5	95.7	133.1	137.4	156.3	164.6
	Height	mm	2,439	3,001	3,001	2,290	2,700	3,210	3,560	3,580
		inch	96.0	118.1	118.1	90.2	106.3	126.4	140.2	140.9

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in condenser is 0.044 m²·°C/kW (0.00025 ft² hr °F/Btu), in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Cooling water temperature outlet is 34.61°C (94.3°F), inlet is 29.44°C (85°F)
 Chilled water temperature outlet is 6.67°C (44°F), inlet is 12.22°C (54°F)
4. Due to our policy of innovation some specifications may be changed without prior notification.
5. All data in this table is rated in accordance with AHRI Standard 550 / 590.

WATER-COOLED CHILLER

Water-cooled Oil Type Centrifugal Chiller (R-513A)

Water-cooled oil type centrifugal chiller has a wide range of applications from 180 to 2,800 RT and has the feature of being able to respond to various design conditions according to customer requirements. In addition, it provides world-class high efficiency while having low GWP (573) by applying R-513A refrigerant.



KEY FEATURES



High Efficiency



Stable Operation



Reliability

LINE UP

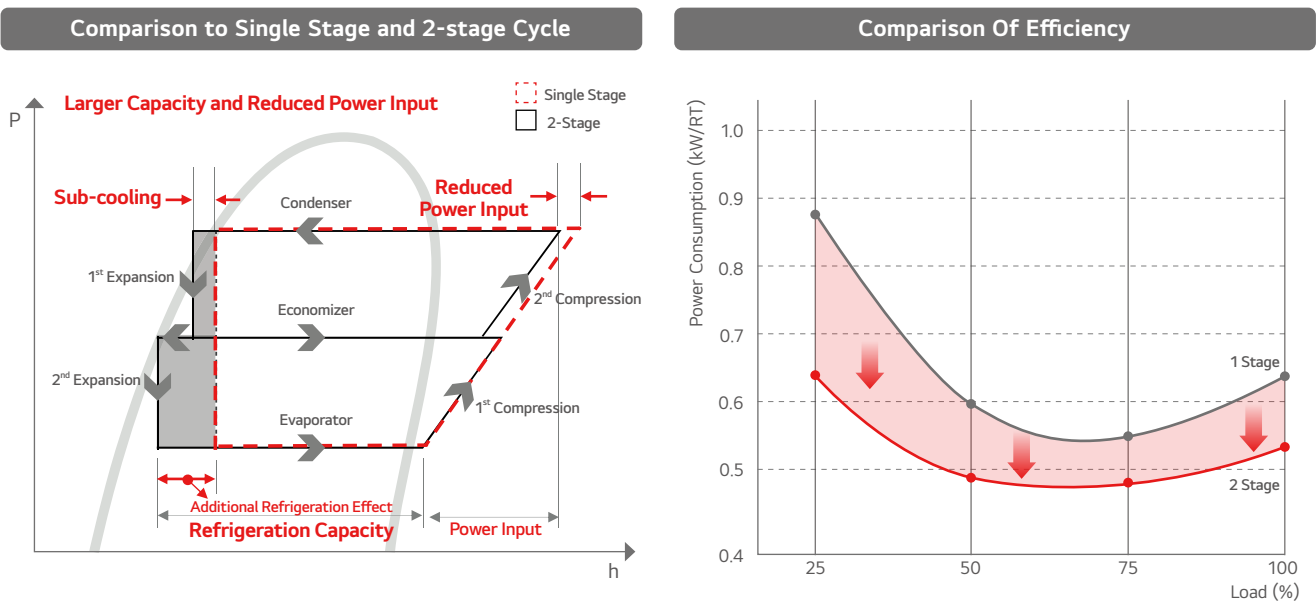
										[usRT]
Model	100	200	300	400	1,000	1,500	2,500	2,500	3,000	
 R-513A 2-stage Centrifugal Chiller (GCWFH)		180	1 Comp.					2,340		
			Low Voltage: ~ 940 RT, High Voltage: ~ 2,340 RT							
				540	2 Comp.			2,800		
				Low Voltage: ~ 1,880 RT, High Voltage: ~ 2,800 RT						

* Low voltage and high voltage inverter applications are available.

CORE TECHNOLOGY

2-stage Compressor

LG can provide high energy performance with optimized 2-stage refrigeration cycle. In the case of a 2-stage cycle using an economizer compared to a single stage cycle, the compressor power consumption required to create the same pressure difference is reduced, and additional cooling capacity can be improved through two-stage expansion.

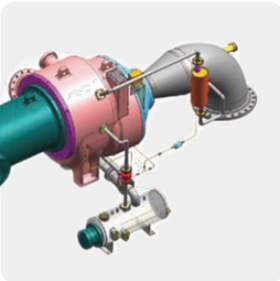


Oil Reclaim System & Automatic Refrigerant Level Control

Oil reclaim system and automatic refrigerant level control improve part load efficiency and keep refrigerant level at any load condition.

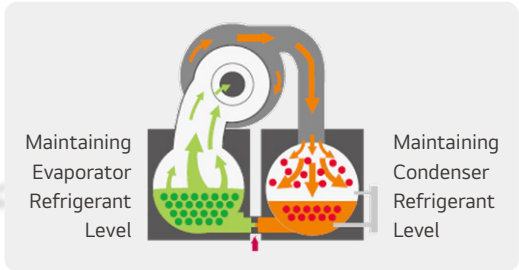
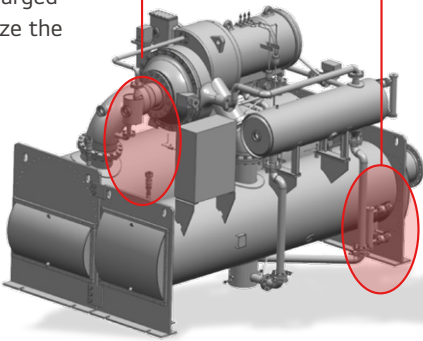
Oil Reclaim System

Stable oil supply to the compressor by directly recovering the oil discharged from the compressor to minimize the flow of oil into the evaporator.



Refrigerant Level Control

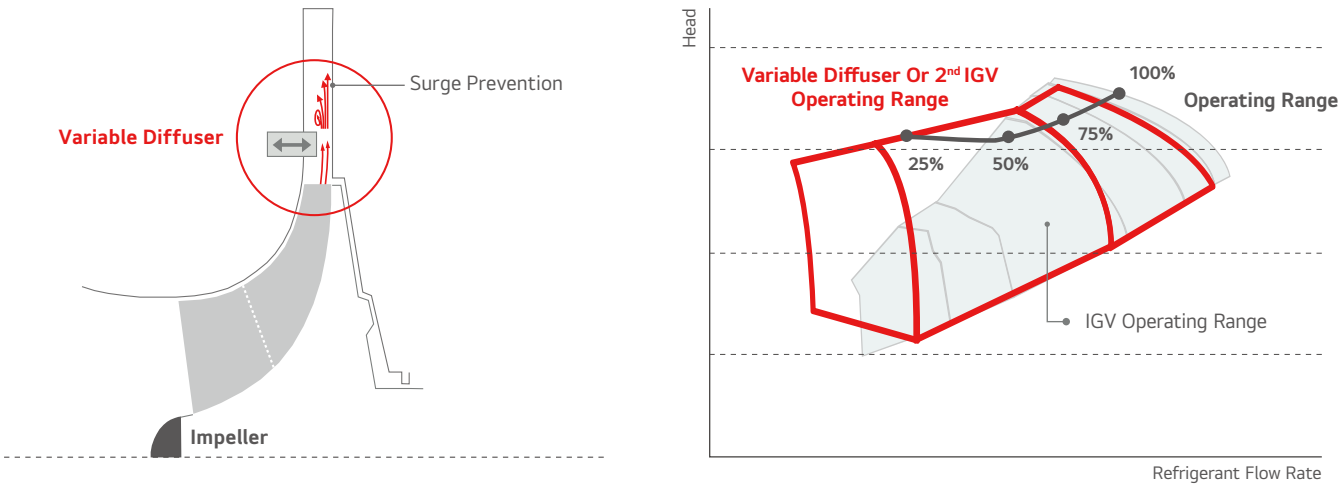
Stable cooling of motor & oil by maintaining refrigerant level in condenser and economizer during load fluctuations.



CORE TECHNOLOGY

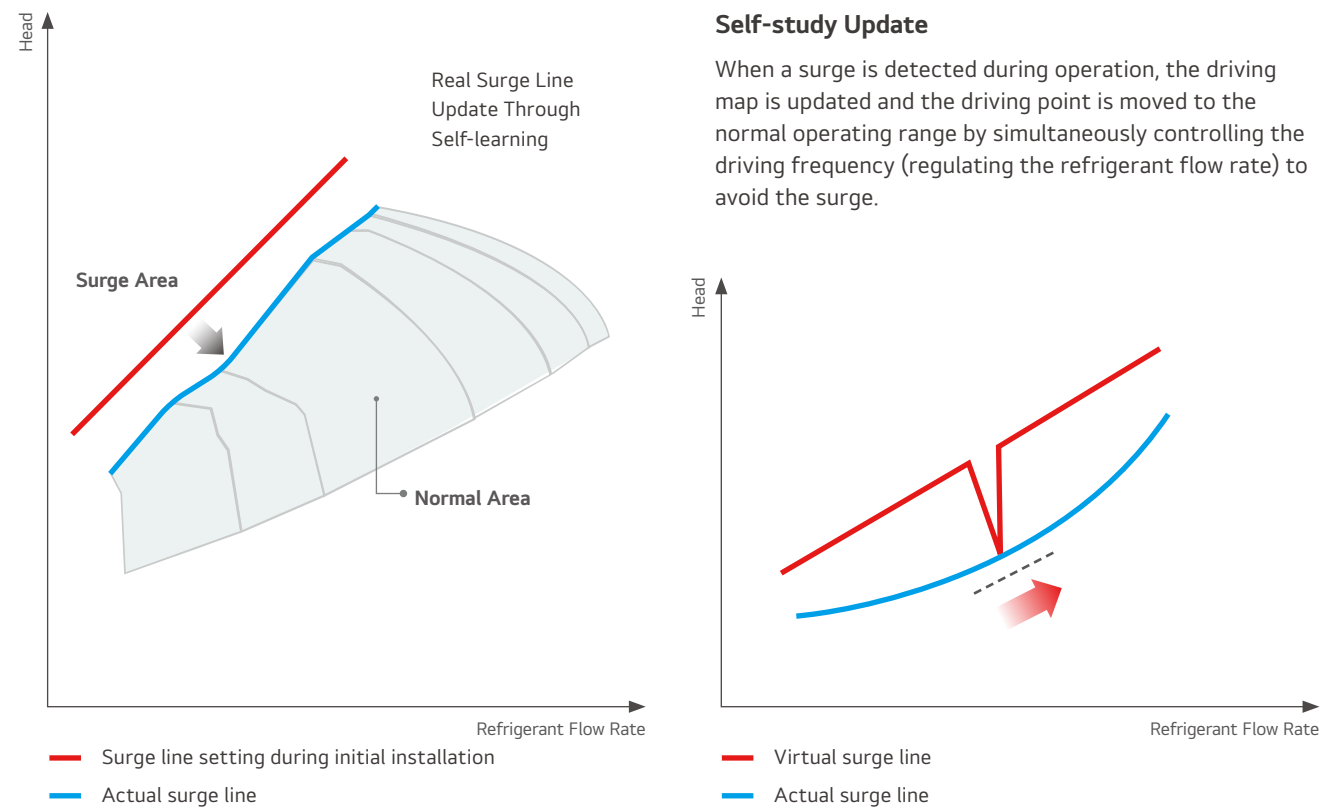
Partial Load Operation Stability

Enlarges the safety operation range at a low-load condition and prevents surge by applying a variable diffuser or 2nd IGV.



Surge Avoidance Control

By applying machine learning, surges can be avoided by learning while operating the chiller and preventing operation in surge-prone areas.



Compressor Optimal Design and Testing Facilities

We optimize the compressor's impeller design and 3D simulation, and ensure reliability through compressor testing facilities.

Impeller Design

Impeller 3D Simulation

Comp. Test Facility

Comp. Overspeed Test (120%)

Compressor Capacity

- 180 ~ 2,800 RT

Compressor Type

- 2 stage

Semi-hermetic Type Motor

The semi-hermetic type, which cools the motor with refrigerant, has a significantly lower risk of leakage than the open type that uses a mechanical seal, which reduces maintenance costs. In addition, it does not emit heat to the machine room, so there is no need for cooling or ventilation equipment to remove heat, and stable operation is possible.

	Semi-hermetic Type Motor	Open Type Motor
Diagram		
Leakage	Leak Tight	Leakage at Mechanical seal
Maintenance Cost	Lower	Higher
Cooling Fluid	Refrigerant	Air
Heat Dissipation	X	O

SPECIFICATIONS

Model Name (GCWFH**)			AL	AM	AN	AP	BM	BN	BP	CM	CN	CP	CQ
Cooling Capacity		usRT	180	225	245	270	380	425	470	510	550	660	750
Weight	Shipping	kg	5,200	5,300	5,400	5,400	7,300	7,400	7,500	9,400	9,400	10,000	10,000
		lb	11,464	11,684	11,905	11,905	16,094	16,314	16,535	20,723	20,723	22,046	22,046
	Operating	kg	5,900	6,100	6,200	6,300	8,700	8,900	9,000	11,200	11,200	12,100	12,100
		lb	13,007	13,448	13,669	13,889	19,180	19,621	19,842	24,692	24,692	26,676	26,676
Compressor	Type	-	2 Stage Centrifugal										
	No.	EA	1										
Evaporator	Flow Rate	m³/h	98	123	133	147	207	232	256	278	300	360	409
		gpm	432	540	588	648	912	1,020	1,128	1,223	1,319	1,583	1,799
	Pressure Drop	kPa	27.5	27.6	32.7	27.7	29.8	30.3	30.1	29.2	28.6	42.0	65.1
		ftH₂O	9.20	9.23	10.94	9.27	9.97	10.14	10.07	9.77	9.57	14.05	21.78
Condenser	Flow Rate	m³/h	127	159	173	190	260	291	322	349	376	450	512
		gpm	561	698	760	836	1,147	1,281	1,416	1,537	1,656	1,981	2,253
	Pressure Drop	kPa	27.1	29.4	29.3	35.4	29.4	32.8	40.0	27.2	31.5	56.7	91.9
		ftH₂O	9.07	9.84	9.80	11.84	9.84	10.97	13.38	9.10	10.54	18.97	30.75
Dimension	Length	mm	3,596	3,596	3,596	3,596	3,631	3,631	3,631	3,736	3,736	4,386	4,386
		inch	141.6	141.6	141.6	141.6	143.0	143.0	143.0	147.1	147.1	172.7	172.7
	Width	mm	2,113	2,113	2,113	2,113	2,242	2,242	2,242	2,409	2,409	2,409	2,409
		inch	83.2	83.2	83.2	83.2	88.3	88.3	88.3	94.8	94.8	94.8	94.8
	Height	mm	2,021	2,021	2,021	2,021	2,231	2,231	2,231	2,466	2,466	2,466	2,466
		inch	79.6	79.6	79.6	79.6	87.8	87.8	87.8	97.1	97.1	97.1	97.1

Model Name (GCWFH**)			DN	DP	EM	EN	EP	F1	F2	F3	G1	G2	G3
Cooling Capacity		usRT	850	940	1,030	1,200	1,400	1,470	1,610	1,740	2,030	2,150	2,340
Weight	Shipping	kg	12,800	12,900	22,100	22,100	22,100	25,100	25,100	26,300	33,900	31,400	31,400
		lb	28,219	28,440	48,722	48,722	48,722	55,336	55,336	57,982	74,737	69,225	69,225
	Operating	kg	15,700	15,800	28,200	28,200	28,200	31,800	31,800	33,000	43,900	40,300	40,300
		lb	34,613	34,833	62,170	62,170	62,170	70,107	70,107	72,753	96,783	88,846	88,846
Compressor	Type	-	2 Stage Centrifugal										
	No.	EA	1										
Evaporator	Flow Rate	m³/h	463	512	561	654	763	801	877	948	1,106	1,171	1,275
		gpm	2,039	2,255	2,471	2,879	3,359	3,526	3,862	4,174	4,870	5,158	5,614
	Pressure Drop	kPa	48.2	52.2	50.5	68.2	92.5	79.7	95.4	111.2	158.2	29.5	34.8
		ftH₂O	16.13	17.46	16.89	22.82	30.95	26.66	31.92	37.20	52.93	9.87	11.64
Condenser	Flow Rate	m³/h	580	641	703	818	952	1,007	1,101	1,189	1,392	1,473	1,602
		gpm	2,554	2,823	3,097	3,600	4,191	4,435	4,850	5,234	6,128	6,485	7,052
	Pressure Drop	kPa	49.4	60.2	58.8	79.0	106.7	84.6	101.0	117.4	132.8	25.2	29.7
		ftH₂O	16.53	20.14	19.67	26.43	35.70	28.30	33.79	39.28	44.43	8.43	9.94
Dimension	Length	mm	4,525	4,525	6,456	6,456	6,456	6,526	6,526	6,526	7,526	7,846	7,846
		inch	178.1	178.1	254.2	254.2	254.2	256.9	256.9	256.9	296.3	308.9	308.9
	Width	mm	2,861	2,861	3,428	3,428	3,428	3,884	3,884	3,884	4,086	3,877	3,877
		inch	112.6	112.6	135.0	135.0	135.0	152.9	152.9	152.9	160.9	152.6	152.6
	Height	mm	2,800	2,800	3,265	3,265	3,265	3,572	3,572	3,572	3,864	3,844	3,844
		inch	110.2	110.2	128.5	128.5	128.5	140.6	140.6	140.6	152.1	151.3	151.3

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in condenser is 0.044 m²·°C/kW (0.00025 ft² hr °F/Btu), in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Cooling water temperature outlet is 34.61°C (94.3°F), inlet is 29.44°C (85°F)
 Chilled water temperature outlet is 6.67°C (44°F), inlet is 12.22°C (54°F)
4. Due to our policy of innovation some specifications may be changed without prior notification.
5. All data in this table is rated in accordance with AHRI Standard 550 / 590.

Model Name (GCWFH**)		AW	BW	CW	CX	DW	EW	
Cooling Capacity	usRT	540	940	1,320	1,500	1,880	2,800	
Weight	Shipping	kg	10,400	13,900	18,100	20,200	23,300	36,600
		lb	22,928	30,644	39,904	44,533	51,368	80,689
	Operating	kg	12,100	16,600	22,000	24,500	28,400	44,700
		lb	26,676	35,597	48,502	54,013	62,611	98,547
Compressor	Type	-	2 Stage Centrifugal					
	No.	EA	2					
Evaporator	Flow Rate	m³/h	302.0	521.0	732.0	834.0	1,042.0	1,553.0
		gpm	1,330	2,294	3,223	3,672	4,588	6,838
	Pressure Drop	kPa	37.3	32.2	46.6	33.9	51.6	57.4
		ftH₂O	12.48	10.77	15.59	11.34	17.26	19.20
Condenser	Flow Rate	m³/h	386.0	654.0	919.0	1,046.0	1,309.0	1,950.0
		gpm	1,700	2,879	4,046	4,605	5,763	8,586
	Pressure Drop	kPa	39.6	45.9	56.9	40.8	63.7	56.3
		ftH₂O	13.25	15.36	19.04	13.65	21.31	18.84
Dimension	Length	mm	7,306	7,306	8,241	7,468	8,439	8,601
		inch	287.6	287.6	324.4	294.0	332.2	338.6
	Width	mm	2,113	2,310	2,409	2,760	2,930	3,790
		inch	83.2	90.9	94.8	108.7	115.4	149.2
	Height	mm	2,150	2,231	2,466	2,740	2,800	3,640
		inch	84.6	87.8	97.1	107.9	110.2	143.3

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in condenser is 0.044 m²·°C/kW (0.00025 ft² hr °F/Btu), in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Cooling water temperature outlet is 34.61°C (94.3°F), inlet is 29.44°C (85°F)
 Chilled water temperature outlet is 6.67°C (44°F), inlet is 12.22°C (54°F)
4. Due to our policy of innovation some specifications may be changed without prior notification.
5. All data in this table is rated in accordance with AHRI Standard 550 / 590.

AIR-COOLED CHILLER

Air-cooled All Inverter Screw Chiller (R-513A)
 Air-cooled All Inverter Screw Free-cooling Chiller (R-513A)

Air-cooled screw chillers include the GCAW series, which provides mechanical cooling only, and the GCDW series, which features integrated free-cooling. Using the low-GWP refrigerant R-513A, they feature all-inverter screw compressors, falling film evaporators, and microchannel heat exchangers, enabling high-efficiency operation even at partial loads.



KEY FEATURES



Advanced
Performance



High
Reliability



User
Convenience



Eco-friendly

LINE UP

[usRT]

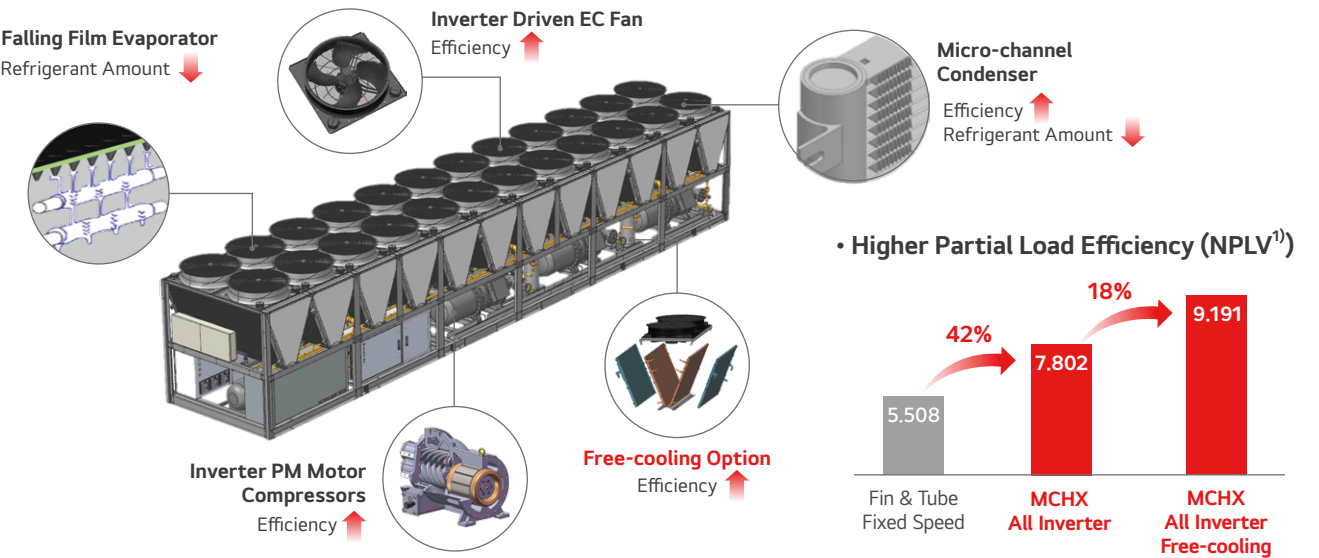
Model	100	200	300	400	500	600
 GCAW Series R-513A MCHX ¹⁾ All Inverter Screw	111	571				
	※ AHRI 550 / 590 condition					
 GCDW Series R-513A MCHX All Inverter Screw Free-cooling	156	470				
	※ Chilled water temp. 28 / 20℃ (82.4 / 68°F), Ambient temp. 40℃ (104°F) condition					

1) MCHX: Microchannel Heat Exchanger

CORE TECHNOLOGY

Advanced Performance

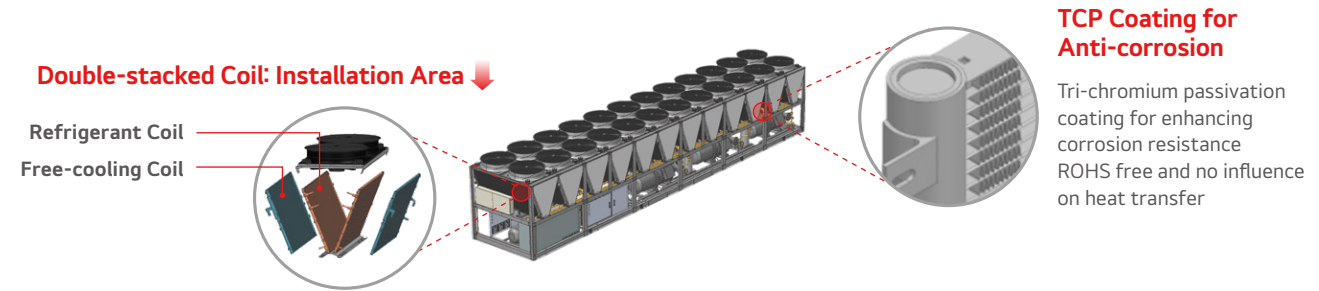
Efficiency has been improved with EC Fan, microchannel heat exchanger, all inverter screw compressor, and integrated free-cooling operation, and the NPLV of the free-cooling type is improved by 67% compared to the fin & tube fixed speed type.



1) Based on chilled water temp. 28 / 20°C (82.4 / 68°F), ambient temp. 40°C (104°F), 3 comp. model
 NPLV = 0.01A + 0.42B + 0.45C + 0.12D (A: 100% COP, B: 75% COP, C: 50% COP, D: 25% COP)

Micro-channel Heat Exchanger

The Micro-channel Heat Exchanger (MCHX) reduces refrigerant charging compared to fin & tube types and increases heat exchange area. TCP coating is standard for corrosion prevention in heat exchangers located in harsh environments, and E-coating is also available as an option for areas prone to corrosion, such as coastal areas.



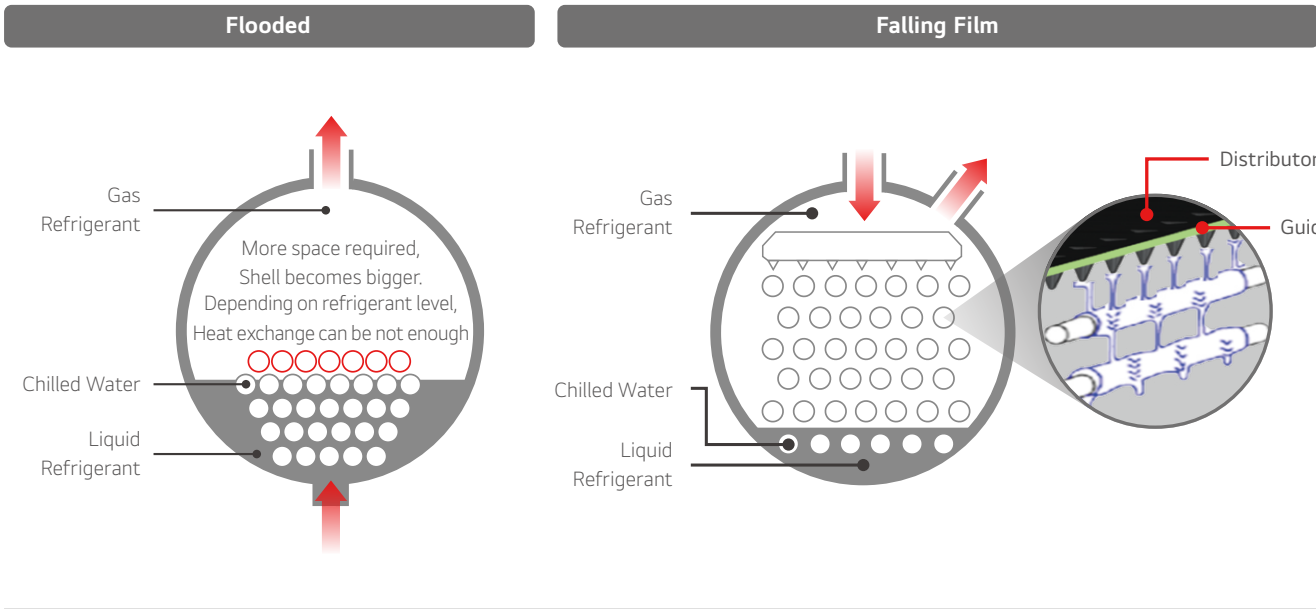
Atmospheric Corrosivity Category (ISO 9223)	C1	C2	C3 (inland)	C3 (coastal)	C4	C5	CX
Corrosivity	Very low	Low	Medium	Medium	High	Very high	Extreme
Typical Environments	Indoor	Rural areas	Urban areas (inland)	Urban areas (coastal)	Polluted urban, industrial, coastal areas	Very high pollution & salt deposition areas	Extreme industrial, coastal areas
TCP Coating	OK	OK	OK	OK ¹⁾	AP	AP	NR
E-coating	OK	OK	OK	OK	OK	AP	AP

※ OK: Recommended / AP: Acceptable when protection is applied / NR: Not recommended
 1) Only possible if installed more than 1 km away from the coast.

CORE TECHNOLOGY

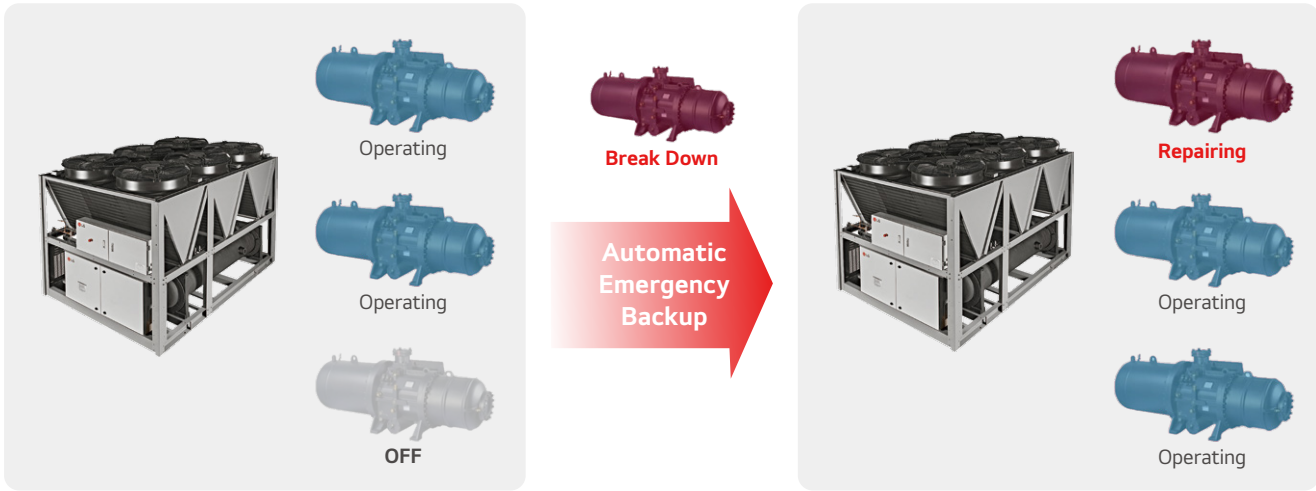
Falling Film Type Evaporator

The enhanced distribution stability of falling film evaporators, achieved through a specially designed distributor, allows for a more compact design and reduced refrigerant charge compared to flooded type. The distributor ensures uniform refrigerant distribution across the heat exchange pipes.



Multi Circuit Back-up Operation

If one compressor or refrigeration cycle experiences a problem or requires repair, the automatic backup system ensures continued reliable operation by automatically switching to a functioning compressor. The multi-circuit system allows for repairs and component replacement without interrupting system operation.



Integrated Free-cooling Operation

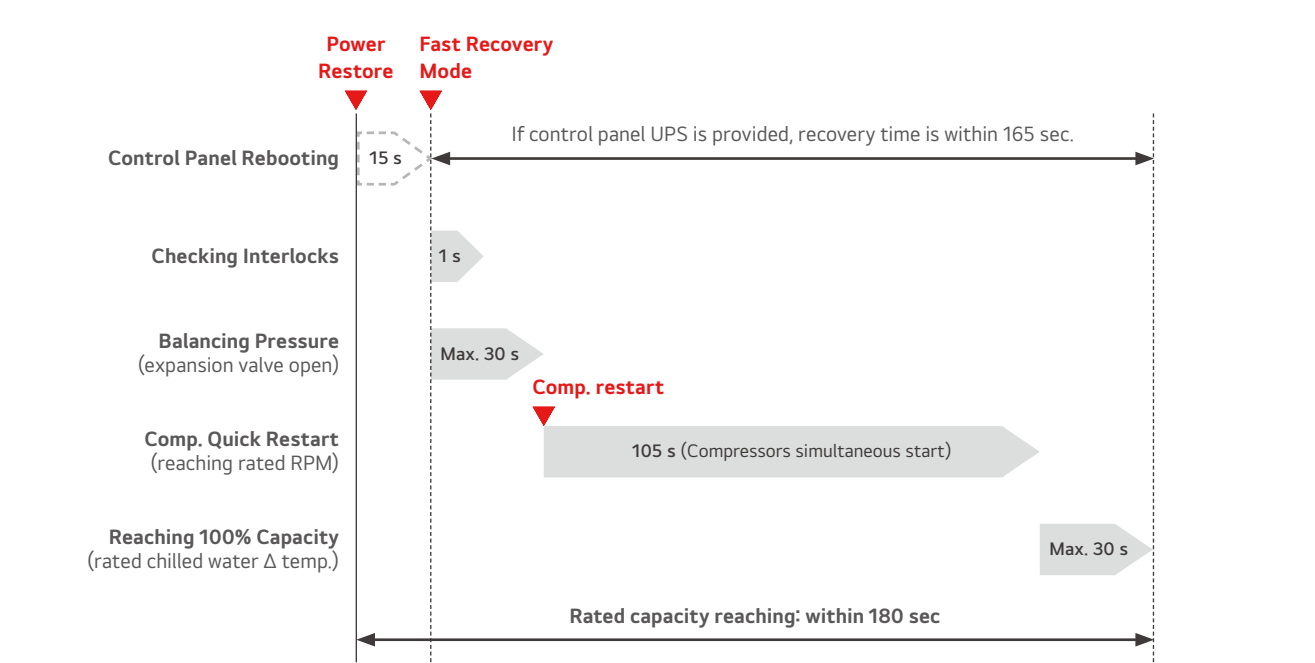
Integrated free-cooling operation is possible in three modes (mechanical, hybrid, and full free-cooling mode), enabling more efficient and convenient operation.

	Mechanical Mode	Hybrid Mode	Full Free-cooling Mode
Operation			
Condition	OAT ¹⁾ ≥ EWT ²⁾ -3°C (5.4°F)	OAT ≥ EWT -3°C (5.4°F)	OAT ≥ EWT -3°C (5.4°F) & LWT ³⁾ ≤ SET ⁴⁾ -0.5°C (0.9°F)

1) OAT: Outdoor Air Temperature
2) EWT: Entering Water Temperature
3) LWT: Leaving Water Temperature
4) SET: Leaving Water Set Temperature

Fast Recovery

Equipped with fast recovery technology, the rated capacity can be reached within 180 seconds after power restore for three compressors, and within 165 seconds when UPS is supplied to the control panel.



※ Full capacity reaching time may be changed depending on the operation environment.

SPECIFICATIONS

GCAW Series (Mechanical Cooling Only Type)

Chilled water temp. 12 / 7°C (53.6 / 44.6°F), ambient temp. 35°C (95°F)

GCAW*****			011GG1A	012GG1A	014GG1A	022GG2A	024GG2A	028GG2A
Unit Capacity		usRT	111.5	124.7	143.2	219.9	249.2	285.9
		kW	392.0	438.5	503.5	773.2	876.4	1,005
Compressor	Type		All Inverter Screw					
	RLA (380 V)	A	191	226	253	190 / 190	226 / 225	253 / 253
	RLA (460 V)	A	158	186	209	157 / 157	186 / 186	209 / 209
	Starting Current	A	0	0	0	0	0	0
	Refrigerant Circuits	EA	1			2		
Evaporator	Type		Falling Film					
	Flow Rate	m³/h	67.29	75.28	86.43	132.7	150.5	172.6
		gpm	296	331	381	584	663	760
	Pressure Drop	mH₂O	9.90	12.2	3.11	4.68	10.9	9.60
		ftH₂O	32.5	40.0	10.2	15.4	35.8	31.5
	Pass		4	4	2	2	2	2
	Connection	inch	5	5	5	6	6	6
Condenser	Type		Micro Channel					
Fan	Type		EC Motor					
	Number	EA	8	8	10	8 / 8	8 / 8	10 / 10
Weight	Shipping Weight	kg	3,600	3,600	4,300	6,400	6,900	8,000
		lb	7,937	7,937	9,480	14,110	15,212	17,637
	Operating Weight	kg	3,854	3,854	4,606	6,812	7,345	8,505
		lb	8,497	8,497	10,154	15,018	16,193	18,750
Dimension	Length	mm	4,010	4,010	4,990	7,950	7,950	9,920
		inch	157.9	157.9	196.5	313.0	313.0	390.6
	Width	mm	2,150	2,150	2,150	2,150	2,150	2,150
		inch	84.6	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320	2,320
		inch	91.3	91.3	91.3	91.3	91.3	91.3

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Due to our policy of innovation some specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or special requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

GCAW*****			030GG3A	033GG3A	036GG3A	044GG4A	048GG4A	056GG4A
Unit Capacity		usRT	301.7	337.0	378.4	439.7	498.4	571.8
		kW	1,061	1,185	1,331	1,546	1,753	2,011
Compressor	Type		All Inverter Screw					
	RLA (380 V)	A	163 / 163 / 163	192 / 192 / 192	227 / 227 / 227	190 / 190 / 190 / 190	226 / 225 / 226 / 225	253 / 253 / 253 / 253
	RLA (460 V)	A	135 / 135 / 135	158 / 158 / 158	187 / 187 / 187	157 / 157 / 157 / 157	186 / 186 / 186 / 186	209 / 209 / 209 / 209
	Starting Current	A	0	0	0	0	0	0
	Refrigerant Circuits	EA	3			4		
Evaporator	Type		Falling Film					
	Flow Rate	m³/h	182.1	203.5	228.5	265.5	300.9	345.2
		gpm	802	896	1,006	1,169	1,325	1,520
	Pressure Drop	mH₂O	9.77	9.77	10.6	4.68	10.9	9.60
		ftH₂O	32.0	32.0	34.8	15.4	35.8	31.5
	Pass		2	2	2	2	2	2
	Connection	inch	8	8	8	6	6	6
Condenser	Type		Micro Channel					
Fan	Type		EC Motor					
	Number	EA	8 / 8 / 8	8 / 8 / 8	8 / 8 / 8	8 / 8 / 8 / 8	8 / 8 / 8 / 8	10 / 10 / 10 / 10
Weight	Shipping Weight	kg	9,600	9,700	10,000	25,600	27,600	27,600
		lb	21,164	21,385	22,046	56,438	60,848	60,848
	Operating Weight	kg	10,282	10,432	10,776	26,424	28,571	28,650
		lb	22,668	22,999	23,757	58,255	62,988	63,162
Dimension	Length	mm	11,900	11,900	11,900	15,900	15,900	19,850
		inch	468.5	468.5	468.5	626.0	626.0	781.5
	Width	mm	2,150	2,150	2,150	2,150	2,150	2,150
		inch	84.6	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320	2,320
		inch	91.3	91.3	91.3	91.3	91.3	91.3

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Due to our policy of innovation some specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or special requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

SPECIFICATIONS

GCDW Series (Free-cooling Type)
Chilled water temp. 28 / 20°C (82.4 / 68°F), ambient temp. 40°C (104°F)

GCDW*****			011GJ1A	012GJ1A	014GJ1A	022GJ2A
Unit Capacity		usRT	156.4	183.3	209.2	312.8
Compressor	Type		All Inverter Screw			
	RLA (380 V)	A	250	280	314	250 / 250
	RLA (460 V)	A	207	231	259	207 / 207
	Starting Current	A	0	0	0	0
	Refrigerant Circuits	EA	1			2
Evaporator	Type		Falling Film			
	Flow Rate	m³/h	59.36	69.57	79.41	118.8
		gpm	261	306	350	523
	Pressure Drop	mH₂O	10.50	6.20	7.38	9.66
		ftH₂O	34.4	20.3	24.2	31.7
	Pass		4	2	2	2
	Connection		inch	4	5	5
Condenser	Type		Micro Channel			
Fan	Type		EC Motor			
	Number	EA	8	10	12	8 / 8
Free-cooling Pump	Input Power	kW	5.0	5.4	7.5	10.3
Weight	Shipping Weight	kg	4,606	5,458	6,227	8,997
		lb	10,154	12,033	13,728	19,835
	Operating Weight	kg	5,123	6,062	6,908	9,936
		lb	11,294	13,364	15,230	21,905
Dimension	Length	mm	4,010	4,990	5,980	7,950
		inch	157.9	196.5	235.4	313.0
	Width	mm	2,150	2,150	2,150	2,150
		inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		inch	91.3	91.3	91.3	91.3

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Due to our policy of innovation some specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or special requirements.

GCDW*****			024GJ2A	028GJ2A	030GJ3A	033GJ3A
Unit Capacity		usRT	369.0	421.0	426.9	470.3
Compressor	Type		All Inverter Screw			
	RLA (380 V)	A	280 / 280	314 / 314	211 / 211 / 211	242 / 242 / 242
	RLA (460 V)	A	232 / 232	260 / 260	174 / 174 / 174	200 / 200 / 200
	Starting Current	A	0	0	0	0
	Refrigerant Circuits	EA	2		3	
Evaporator	Type		Falling Film			
	Flow Rate	m³/h	140.1	159.8	162.1	178.6
		gpm	617	704	714	786
	Pressure Drop	mH₂O	8.69	10.10	11.90	11.80
		ftH₂O	28.5	33.1	39.0	38.7
	Pass		2	2	2	2
	Connection		inch	6	8	8
Condenser	Type		Micro Channel			
Fan	Type		EC Motor			
	Number	EA	10 / 10	12 / 12	8 / 8 / 8	8 / 8 / 8
Free-cooling Pump	Input Power	kW	11.0	13.6	13.6	13.6
Weight	Shipping Weight	kg	10,626	12,104	12,879	13,330
		lb	23,426	26,685	28,393	29,388
	Operating Weight	kg	11,771	13,396	14,167	14,716
		lb	25,951	29,533	31,233	32,443
Dimension	Length	mm	9,920	11,900	11,900	11,900
		inch	390.6	468.5	468.5	468.5
	Width	mm	2,150	2,150	2,150	2,150
		inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		inch	91.3	91.3	91.3	91.3

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH₂O = 9.8 kPa, 1 ftH₂O = 3.0 kPa
2. Fouling factor of water in evaporator is 0.018 m²·°C/kW (0.0001 ft² hr °F/Btu)
3. Due to our policy of innovation some specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or special requirements.

02 AIR COOLING SOLUTION

- CRAH (FAN WALL UNIT)



CRAH (FAN WALL UNIT)

The modular FWU has a lineup of two modules with a maximum cooling capacity of 405 kW and can be customized to fit the data center dimensions.



KEY FEATURES



Advanced
Performance



High
Reliability



User
Convenience



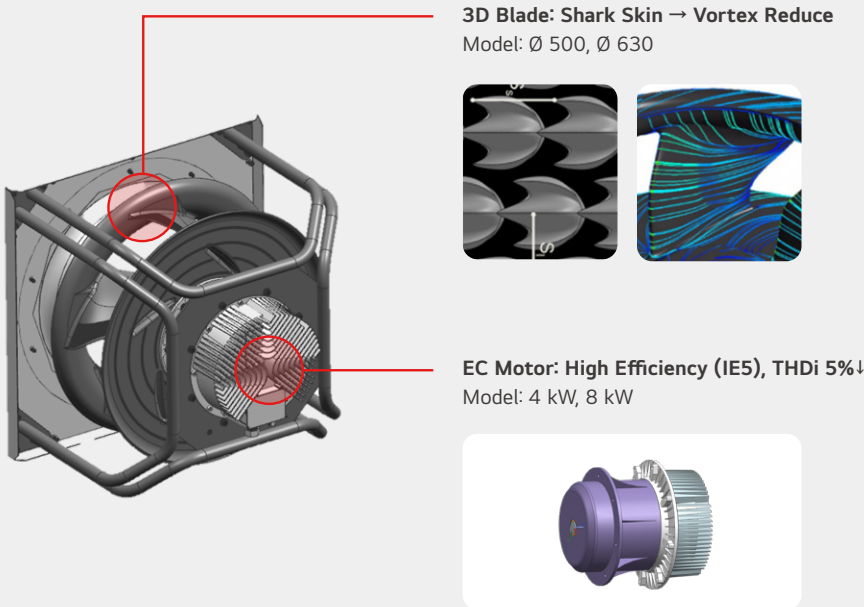
Eco-friendly

CORE TECHNOLOGY

Superior Energy Efficiency

The modular FWU structure makes the high-efficiency LG 3D Blade EC Fan and low static pressure oval coil are applied to minimize electricity usage.

High-efficiency LG 3D Blade EC Fan



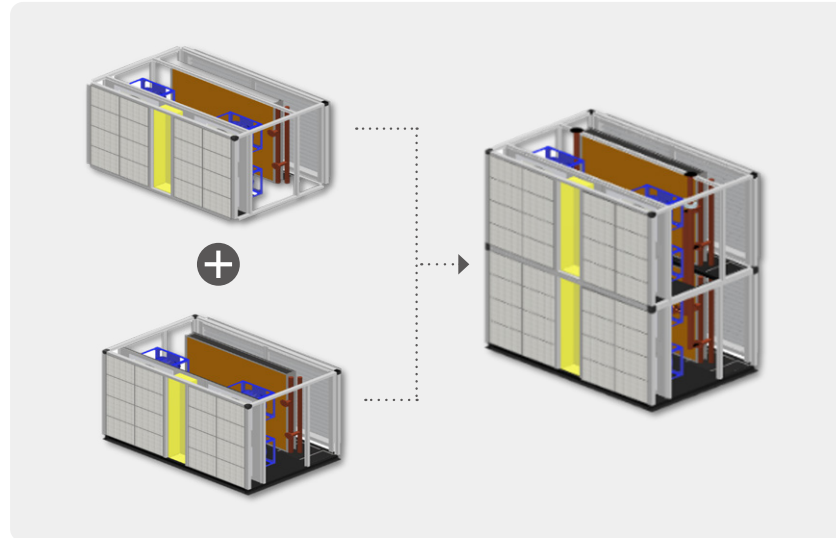
Oval Coil

	Circle Coil	Oval Coil
Type		
Air Velocity	2 ~ 3 m/s	4 ~ 6 m/s
Pressure Drop	94 Pa	65 Pa

CORE TECHNOLOGY

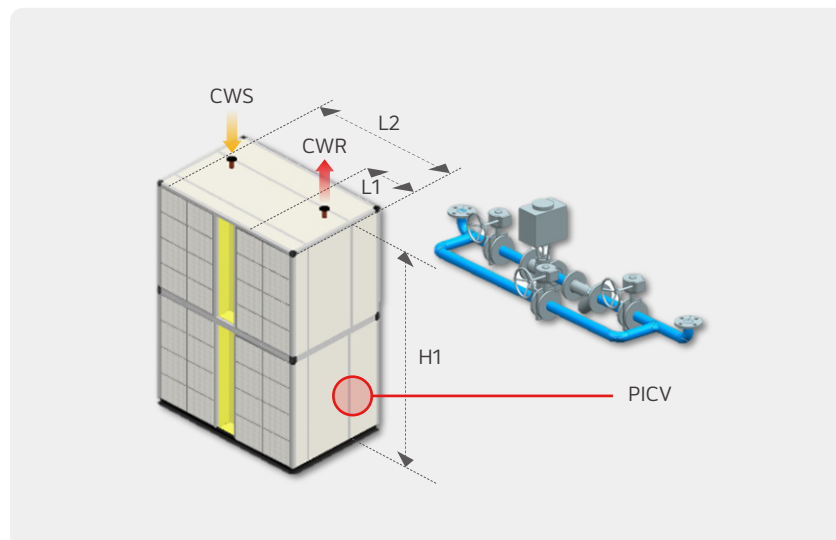
Easy Installation and Maintenance

The modular FWU structure makes installation and maintenance convenient.



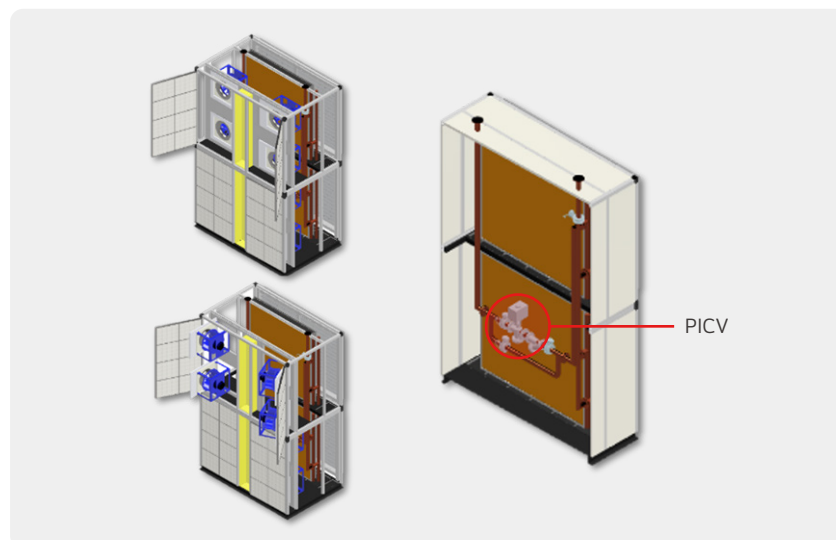
Minimizing On-site Work

By assembling FWU in factory, construction period and costs are reduced by minimizing on-site work



Included Customized Piping

It includes piping that is accurately designed and of excellent quality. Pre-pipe construction by providing accurate main piping location in advance

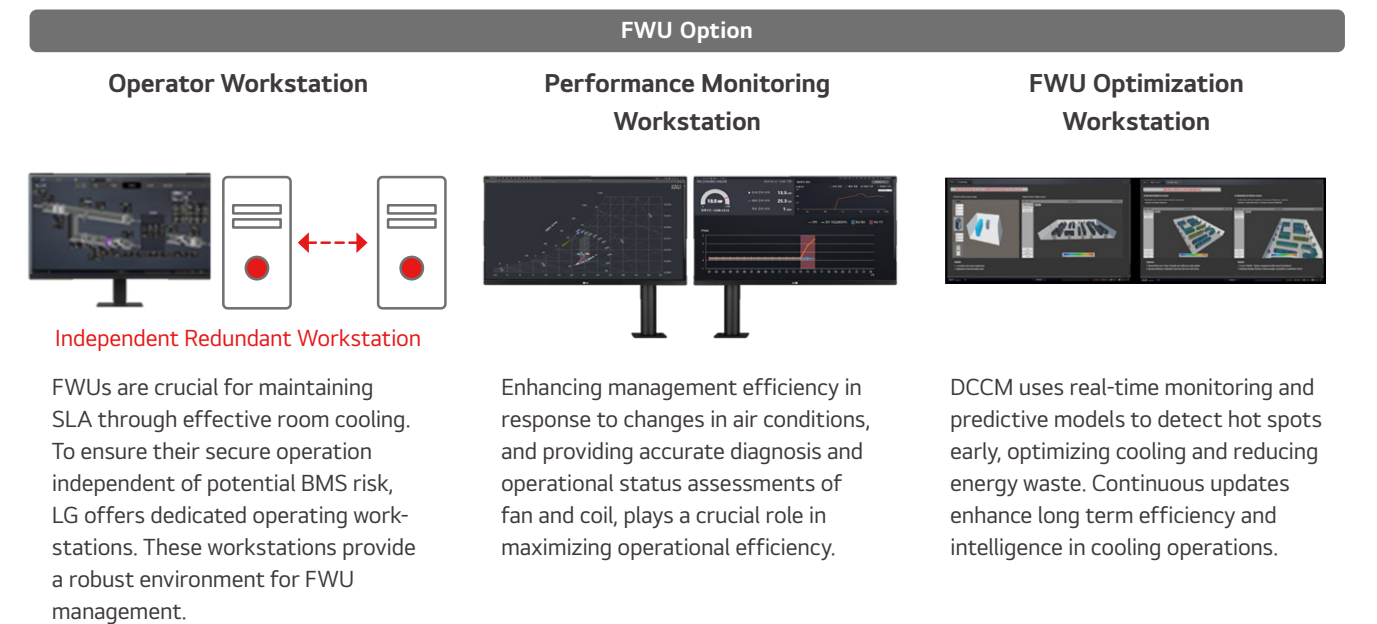
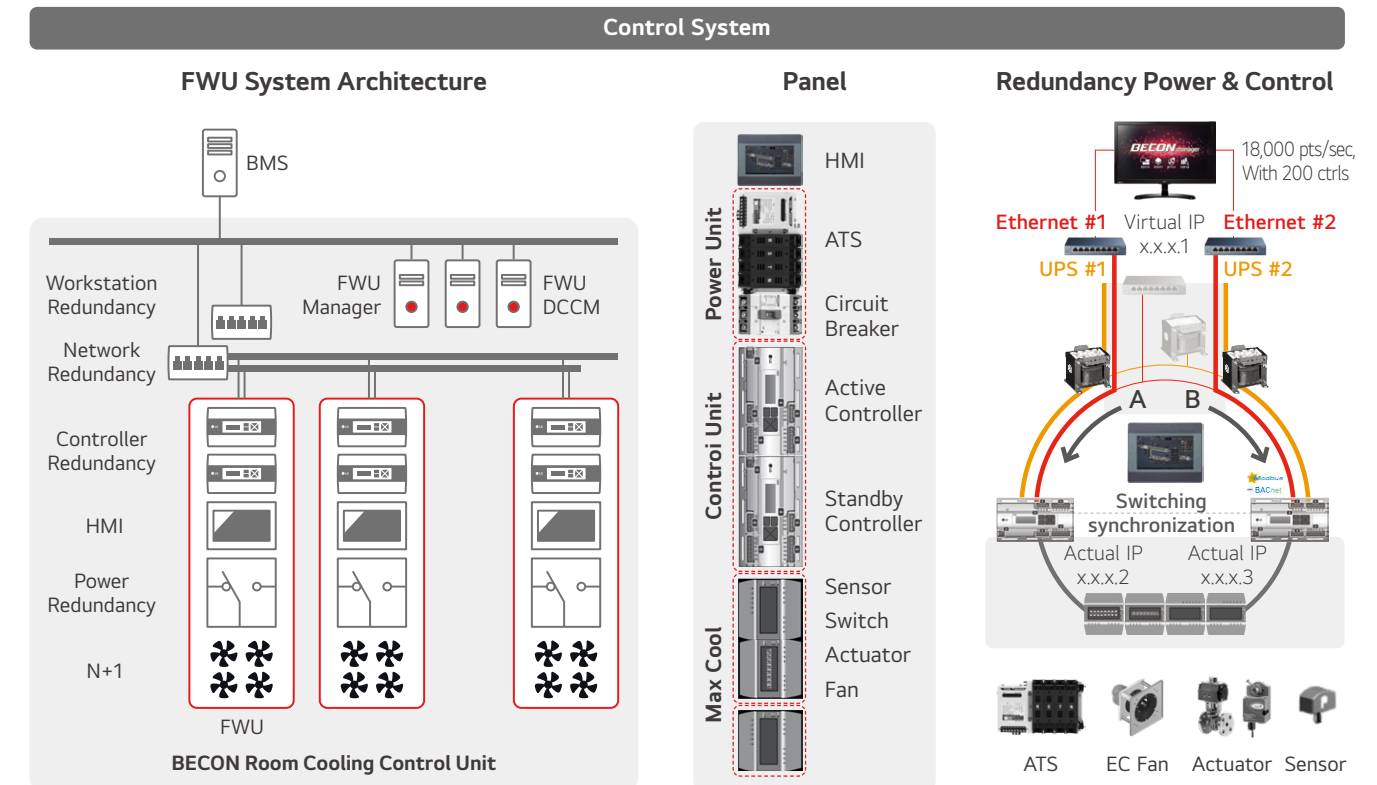


Minimizing On-site Work

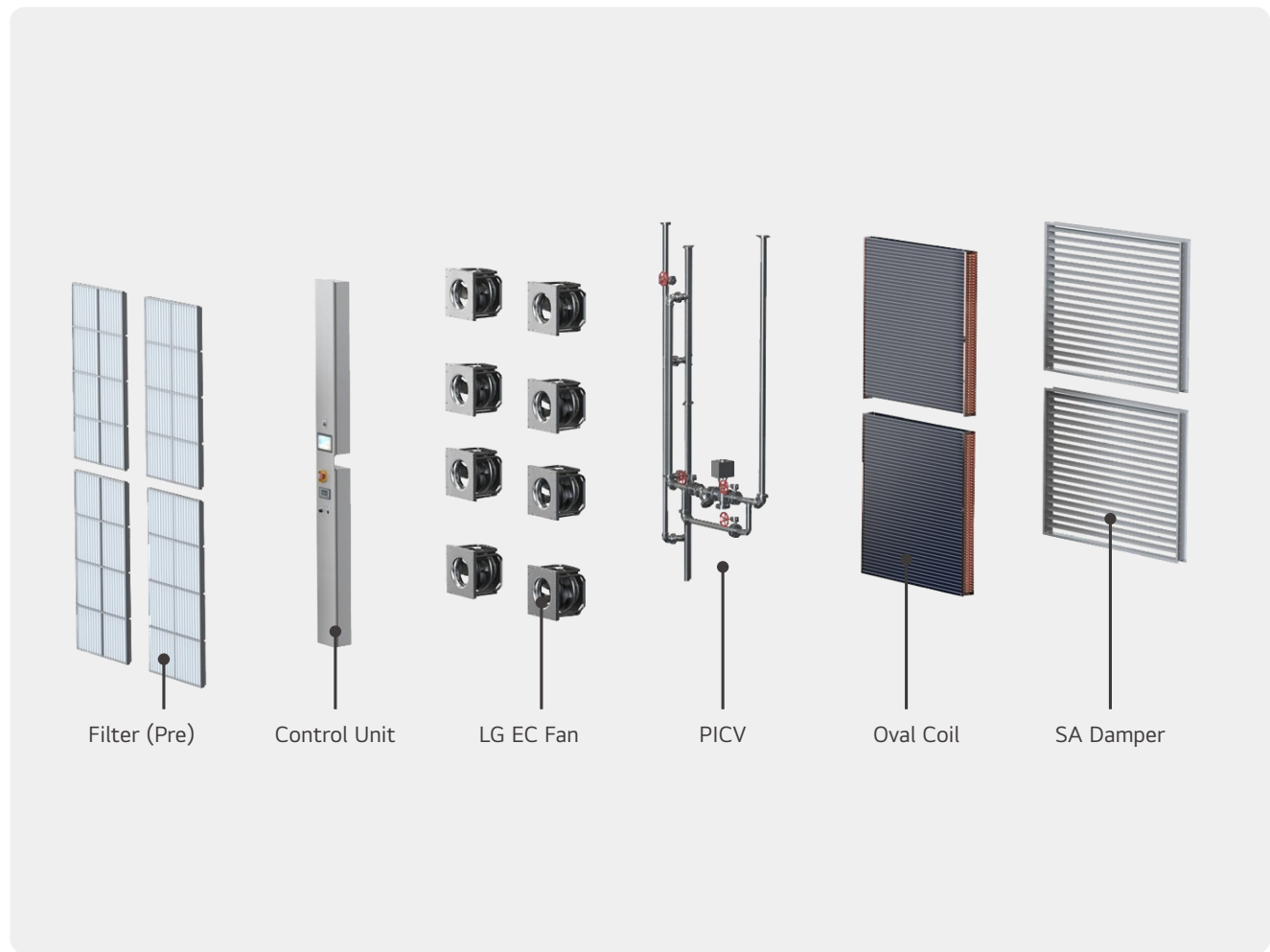
Maintenance space for Filter & EC Fan through Swing Hinge. Convenient of Piping inspection and replacement

FWU Dedicated Control

The FWU dedicated control enhances the reliability of equipment control and monitors the status of components in real-time. Notably, it offers a solution that intelligently optimizes energy usage in data centers, thereby reducing operational costs and enhancing sustainability.



SPECIFICATIONS



NOTE

Air & Chilled Water Condition			Return air temp. 96.8°F (36°C), Supply air temp. 77°F (25°C), Chilled water temp. 68/82.4°F (20/28°C)					
Module Q'ty			1	1	1	2	2	2
Total Cooling Capacity		kW	165	165	245	325	325	405
Sensible Cooling Capacity		kW	165	165	245	325	325	405
Water Flow Rate		GPM (LPM)	78.1 (295.8)	78.1 (295.8)	116.0 (439.2)	153.7 (582.0)	153.7 (582.0)	191.6 (725.4)
Fan	Air Volume	CFM (CMH)	23,520 (40,000)	23,520 (40,000)	35,315 (60,000)	47,085 (80,000)	47,085 (80,000)	58,859 (100,000)
	Pressure Drop	Pa	410	410	410	410	410	410
	Fan Type	-	LG EC 500	LG EC 630	LG EC 630	LG EC 500	LG EC 630	LG EC 630
	Q'ty	-	4	4	4	8	6	6
	Motor Input	kW	7.00 (1.75 x 4)	6.40 (1.60 x 4)	11.04 (2.76 x 4)	14.00 (1.75 x 8)	13.86 (2.31 x 6)	19.80 (3.3 x 6)
	Motor Power	kW	4.0 x 4	4.0 x 4	4.0 x 4	4.0 x 8	4.0 x 6	4.0 x 6
Coil	Inlet / Outlet Pipe	inch (mm)	2½ / 2½ (65 / 65)	2½ / 2½ (65 / 65)	2½ / 2½ (65 / 65)	3 / 3 (80 / 80)	3 / 3 (80 / 80)	3 / 3 (80 / 80)
Power Supply			380 ~ 440 V, 50/60 Hz					
Size	W	inch (mm)	106.3 (2,700)	114.2 (2,900)	114.2 (2,900)	106.3 (2,700)	114.2 (2,900)	129.9 (3,300)
	D	inch (mm)	82.7 (2,100)	86.6 (2,200)	86.6 (2,200)	82.7 (2,100)	86.6 (2,200)	86.6 (2,200)
	H	inch (mm)	103.1 (2,620)	112.2 (2,850)	142.9 (3,630)	199.6 (5,070)	198.8 (5,050)	198.8 (5,050)

* Due to our policy of innovation some specifications may be changed without prior notification.

03 LIQUID COOLING SOLUTION

- CDU
- COLD PLATE



CDU

LG supplies CDUs with specifications optimized for DLC cooling. Standard server form factors make it easy to switch to AI workloads.



KEY FEATURES



High Efficiency Inverter Pump
Including Redundancy



Precise Control of TCS
Temperature and Flow Rate



High Efficiency Filter:
25 / 30 μ (TCS), 250 μ (FWS)



High Pressure HEX: Max. 20 bar



Low Approach Temp. Difference:
4°C (7.2°F)



Compact Unit Size
(Saving Installation Space)

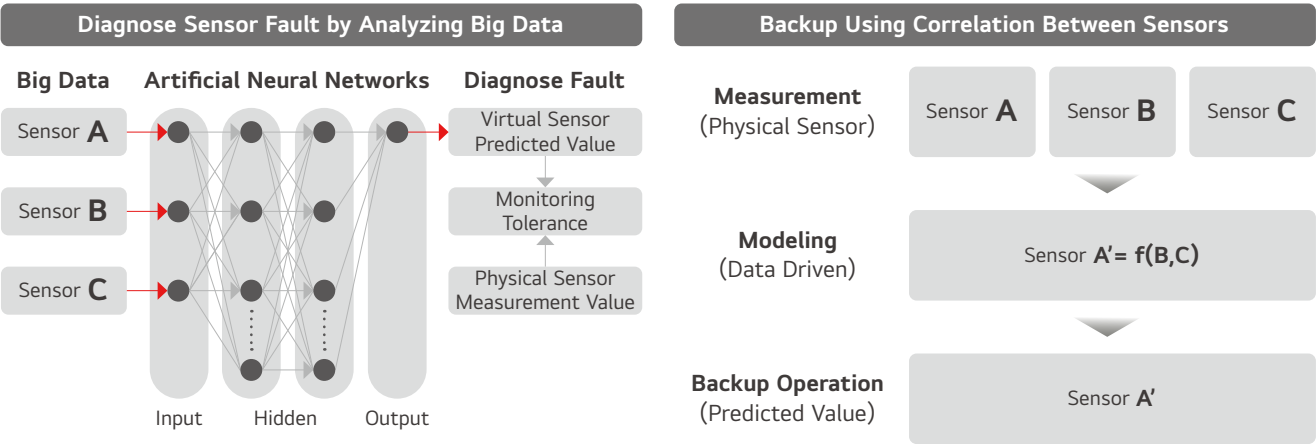
CORE TECHNOLOGY

AI Virtual Sensor

AI virtual sensor ensures non-stop operation and predicts / diagnoses sensor failures.

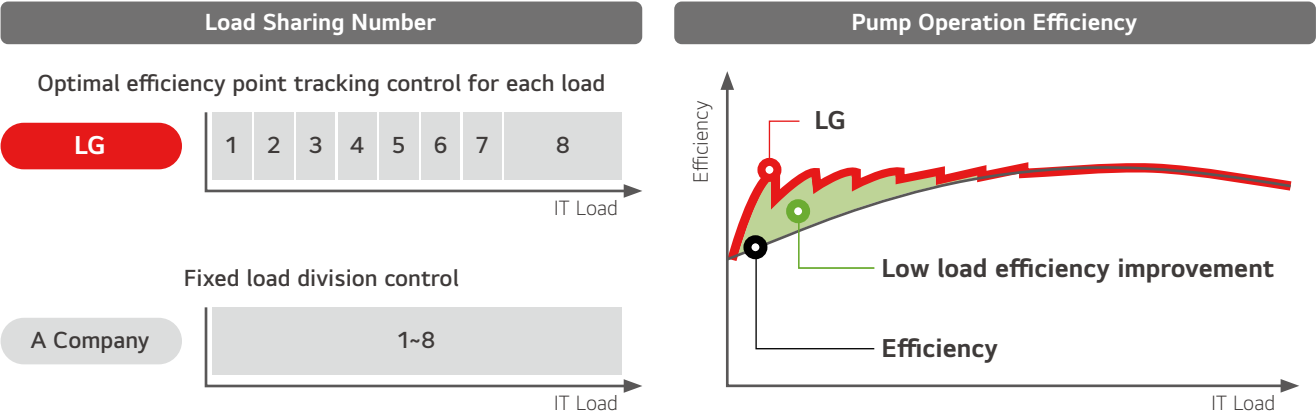
	A Company	LG
2N, 3N Sensor Fault	Normal Operation Backup Sensor Allowance Control	Normal Operation Backup Sensor Allowance Control
N Sensor Fault	Operation Stop No Backup Sensor	Normal Operation Virtual Sensor Allowance Control

Redundancy		A Company	LG
Pump / Inverter		2N	2N
Sensor	TCS Inlet Temperature	3N	3N
	Level, TCS Outlet Pressure	2N	2N
	Virtual Sensor Backup	N / A	10 EA



ALS (Active Load Sharing) Technology

Pump speed optimal efficiency point tracking and CDU operating number control for each load. Multiple pumps dynamically share the load to enhance operation efficiency.



* In the case of parallel simultaneous operation of 8 CDUs
* The waiting inverter is hot-standby and no affect redundancy operation. (Changeover time < 200 ms)

CORE TECHNOLOGY

Versatile Design

Compact size with using IT standard sever rack form factor. Easy installation with top & bottom pipe connection and wheel.

Compact size

Top & bottom pipe connection

FWS	TCS
Down	Down
Down	Up
Up	Down
Up	Up

Wheel mode
Fixed mode
Height adjustable

Easy movement with wheel

Hot Swap Structure

Non-stop maintenance with hot-swap technology. Pipe and fittings (sensor, filter, etc.) can be replaced easily by quick release structure.

Pump slide rail structure

Quick release coupling

Quick release filter

Joint without welding

Well type sensor

Intuitively Eye-catching HMI

Large screen can be increased visibility and control convenience. UX design with access to all functions from the main screen can make easy for user to control.

10.4-inch Electrostatic Full-touch Screen

7 inch

10.4 inch

A Company

LG

Coolant Flow Animation & Display of Abnormal Parts

SPECIFICATIONS

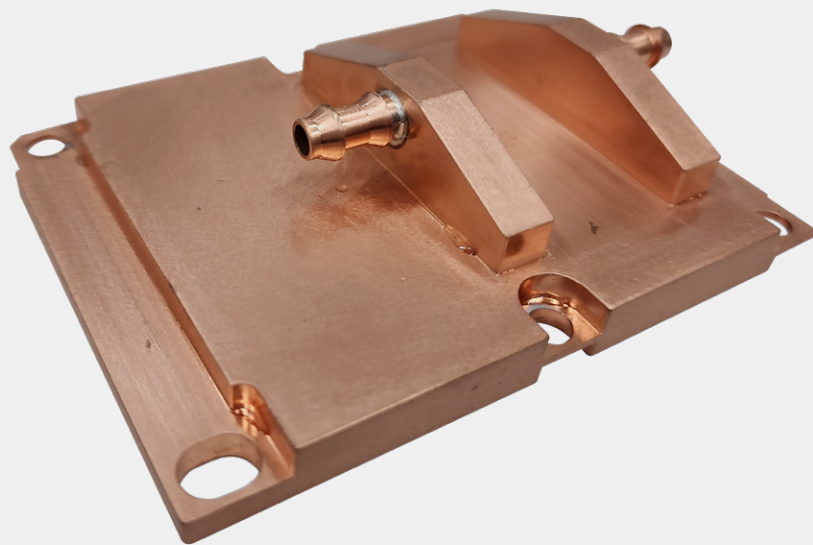


Capacity		650 kW
Size (W x D x H)		590 x 1,270 x 2,080
TCS	Fluid	PG 25
	ATD	4°C (7.2°F)
	In/Out Δt	15°C (27°F)
	Flow Rate	648 lpm (2 pump)
	Conn. Pipe	65 A (2 ½")
	Filter	25 / 30 micron
FWS	Fluid	Water, Water / glycol
	In / Out Δt	15°C (27°F)
	Flow Rate	630 lpm
	Max. Pressure	20 bar
	Conn. Pipe	65 A (2 ½")
	Filter	250 micron

* Due to our policy of innovation some specifications may be changed without prior notification.

COLD PLATE

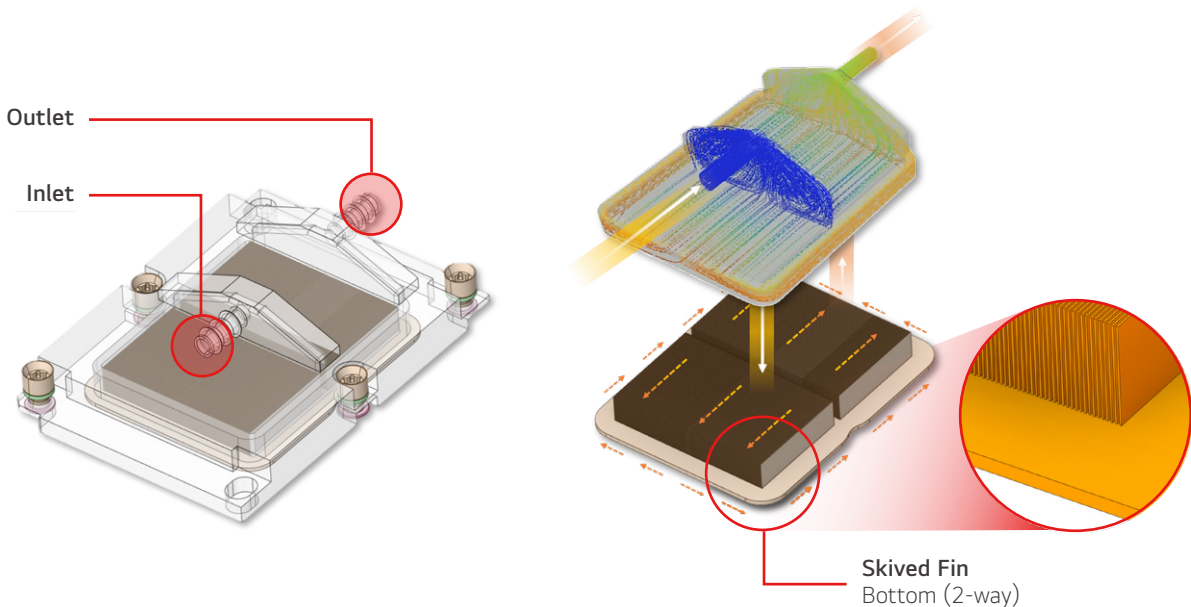
LG cold plate has a skived fin, 2-way flow, and parallel coolant supply structure to improve even cooling performance, and applies brazing bonding technology and conducts triple leakage tests to prevent leakage. We support a performance simulator using AI to quickly respond to customer requirements with optimized design.



CORE TECHNOLOGY

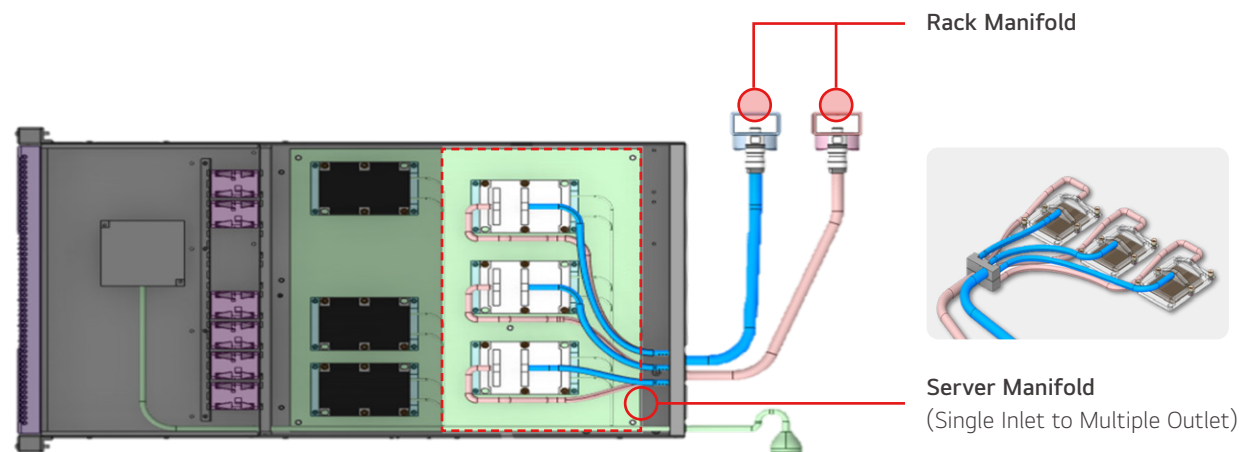
Skived Fin & 2-way Flow

The heat exchange area of the microchannel is maximized through the skived fin micro-process, and the inlet is placed in the middle of the cold plate to form a 2-way flow, thereby achieving even temperature removal performance and minimizing pressure loss.



Parallel Coolant Supply

It is configured to secure stable cooling performance by supplying coolant at the same temperature in parallel to the cold plate through the server manifold. Nonetheless, if you request a serial connection piping structure, it can be provided.



KEY FEATURES



Outstanding Cooling
Performance



Optimized
Design



Reliable
Stability

CORE TECHNOLOGY

Triple Leak Tests

After combining the upper and lower plates of the cold plate through a brazing bonding process, reliability was secured through leakage prevention through triple leak tests (helium, ultrasonic, and pneumatic).

Section of Cold Plate

Skived Fin

Top Plate

Brazing Line

Bottom Plate

Leak Inspection

1. Helium Leak Test

2. Ultra Sonic Test (Bonding Area Measurement)

3. Pneumatic Test (0.5 MPa / 3 min, Pressure Drop < 3.5 kPa)

AI-powered Optimization

We provide optimized designs tailored to customer requirements through cold plate's diverse database and AI-powered performance simulator.

Database

DOE

CAE / Exp

Data Analysis

Data Training

Input

Output

Performance Simulator

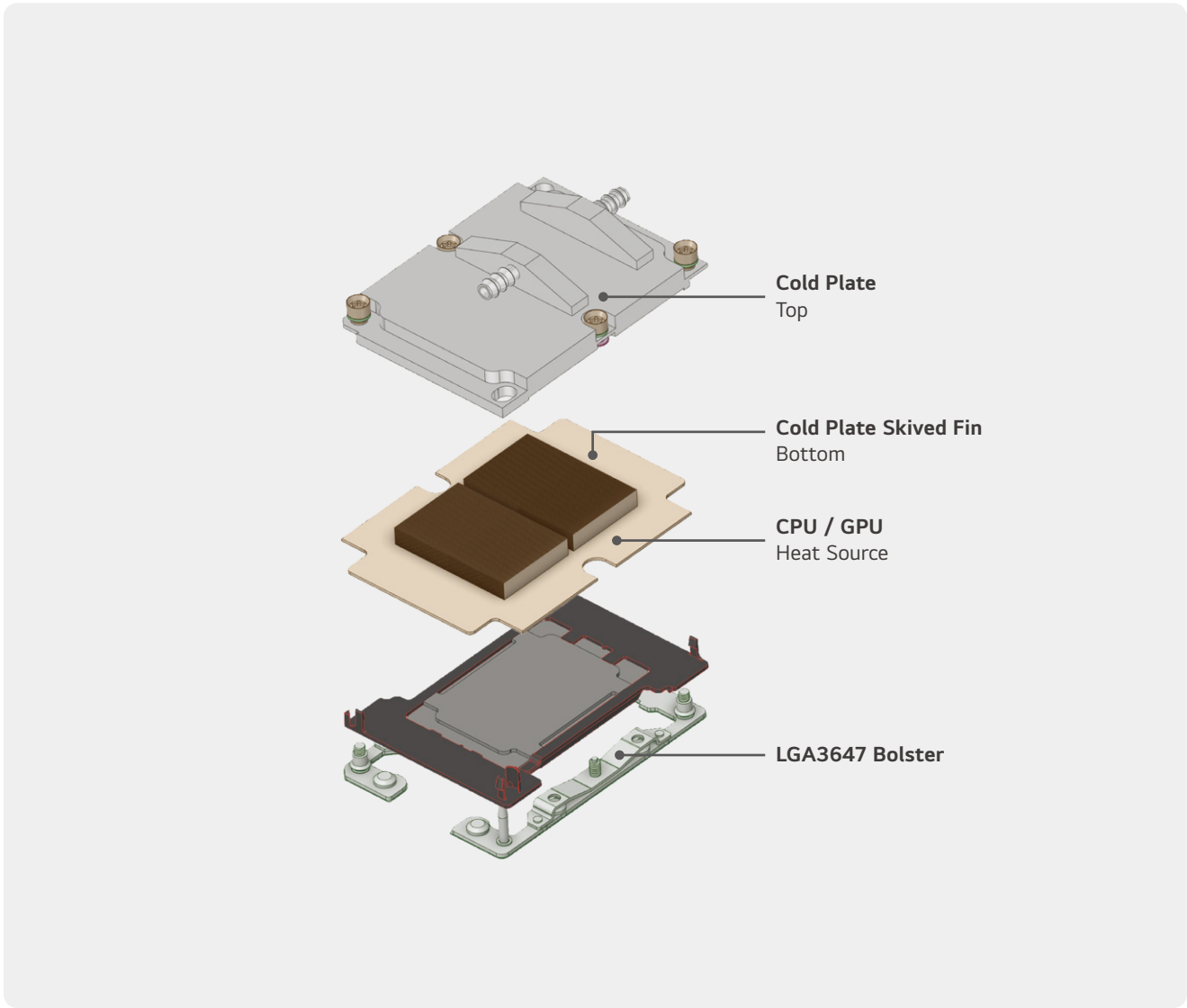
LGE Cold Plate Performance Simulator

Caution: This simulator only gives data for FCLGA3647 based chip's cold plates. Cold plate's fin height is fixed at 3mm.

User Input

Optimized Output

SPECIFICATIONS



Fin Pitch	0.35 mm
Fin Density	72 Fins Per Inch
Operational Range	-10°C ~ 90°C (10°F ~ 194°F)
Sealing Methodology	Brazing
Cold Plate Material	Copper
Housing Material	Copper
Thermal Resistance	0.0242°C/W @ 1 L/min
Pressure Drop	2.8 kPa @ 1 L/min
Dimensions (W x D x H)	108 x 78 x 25 mm

* Due to our policy of innovation some specifications may be changed without prior notification.

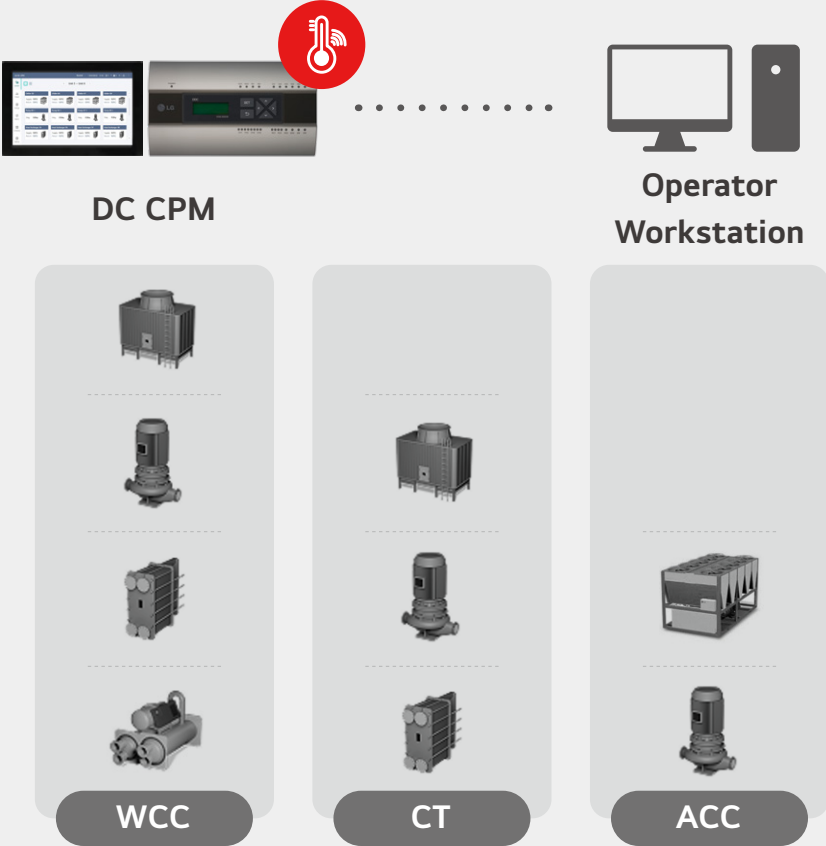
04 COOLING SYSTEM MANAGEMENT

- DC CPM
- DCCM



DC CPM

LG’s DC CPM provides chilled water to CDUs and CRAHs, enabling efficient cooling for high-density AI workloads.



KEY FEATURES



Buffer Tank Control



Precise Control Of TCS Temperature and Flow Rate



Low-load Operation



Power Failure Response / Power Restore Operation



Free Cooling

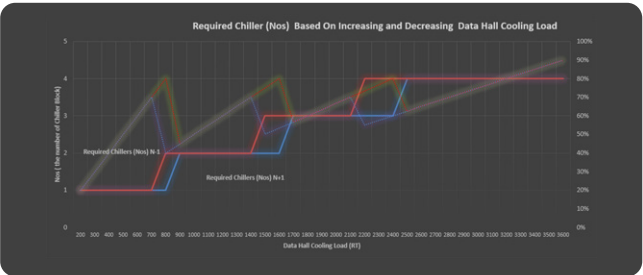


Redundant Controller

What is DC CPM

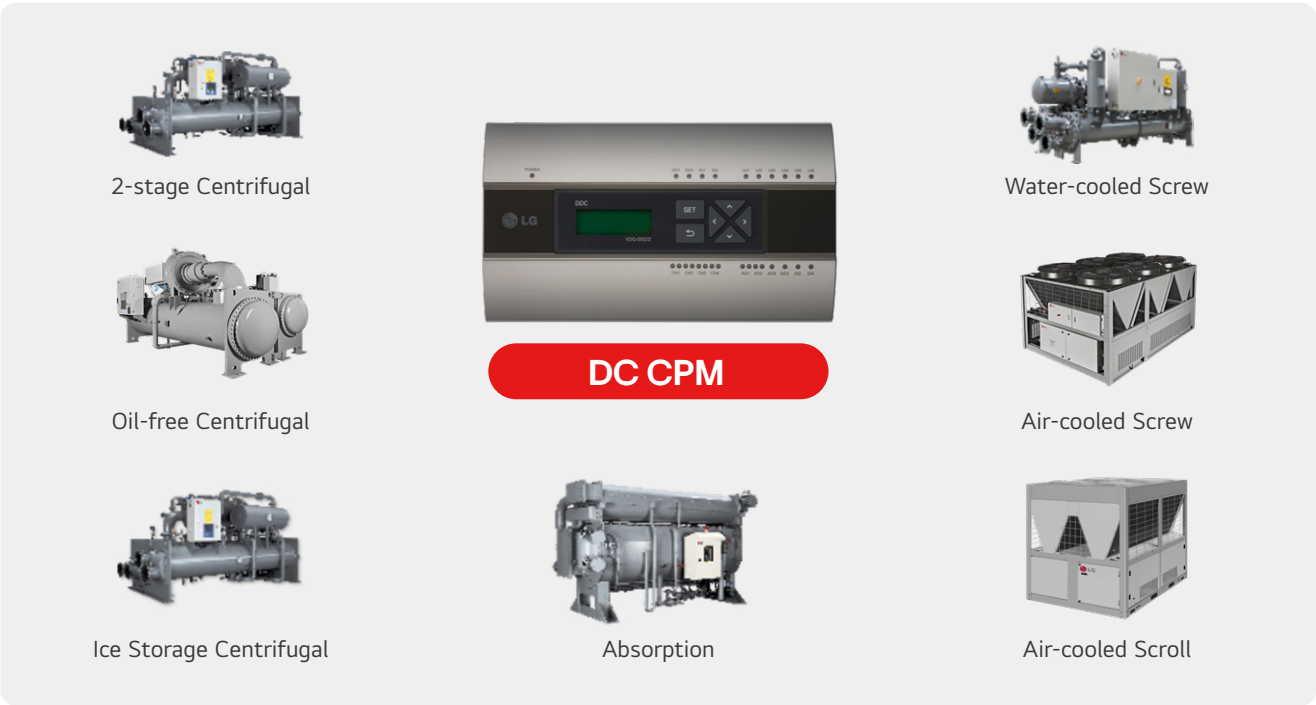
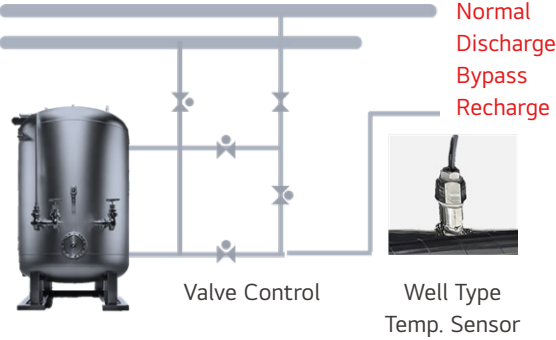
CPM improves system performance by optimizing control through direct access to LG chiller data. The control algorithm is composed of a base logic and site-specific customization logic, enabling flexible adaptation to diverse field requirements. Furthermore, the system can be upgraded to a Digital Twin environment through DCCM for CPM integration.

Chiller Staging IN / OUT

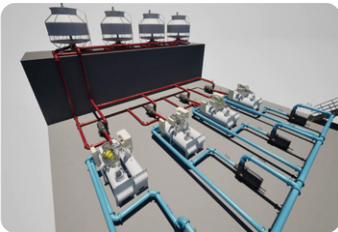


- Calculated System Cooling Load
- System Chilled Water Flow
- Chilled Water Supply Temperature

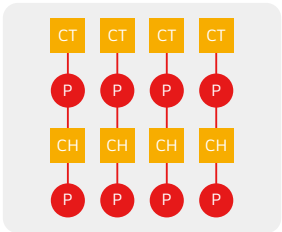
Reliable Chilled Water Delivery



Automatic Failure Recovery

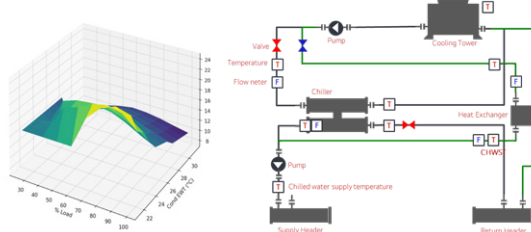


Power Outage / Restoration, Operation Fault



Chiller Block Control

Optimized Free Cooling

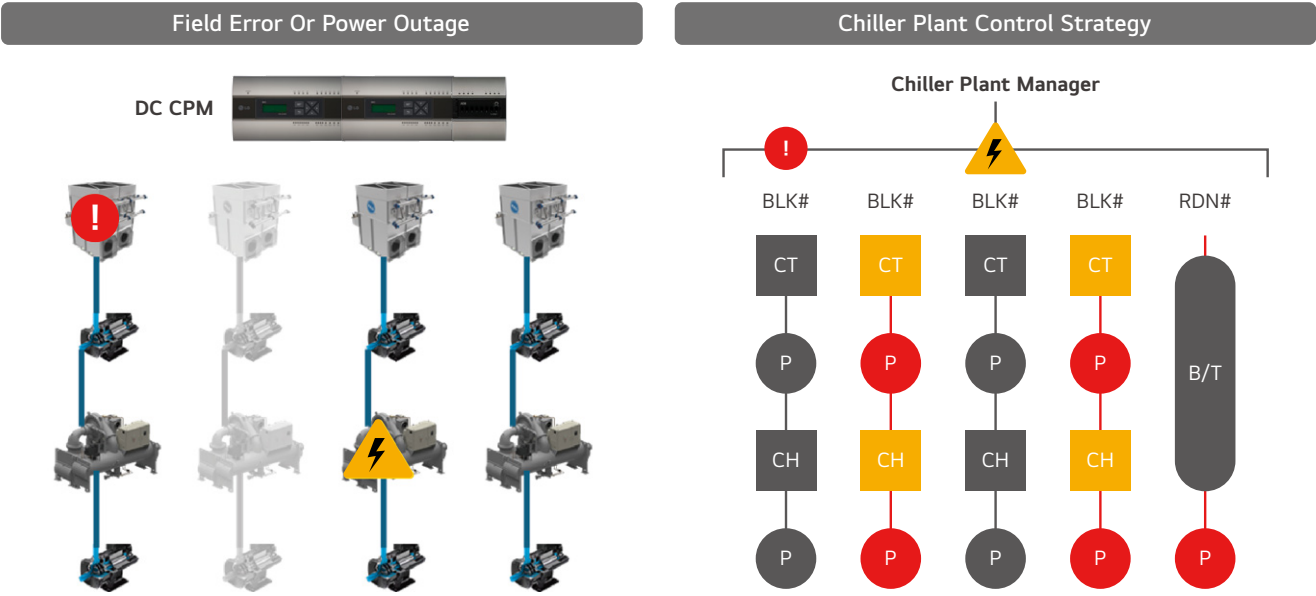


- Free Cooling
- Cooling Tower Fan Off / Hybrid
- Mechanical Cooling

CORE TECHNOLOGY

Enhanced Availability

Enhanced reliability is achieved by enabling continuous and stable chiller operation under equipment failure and power outage conditions.



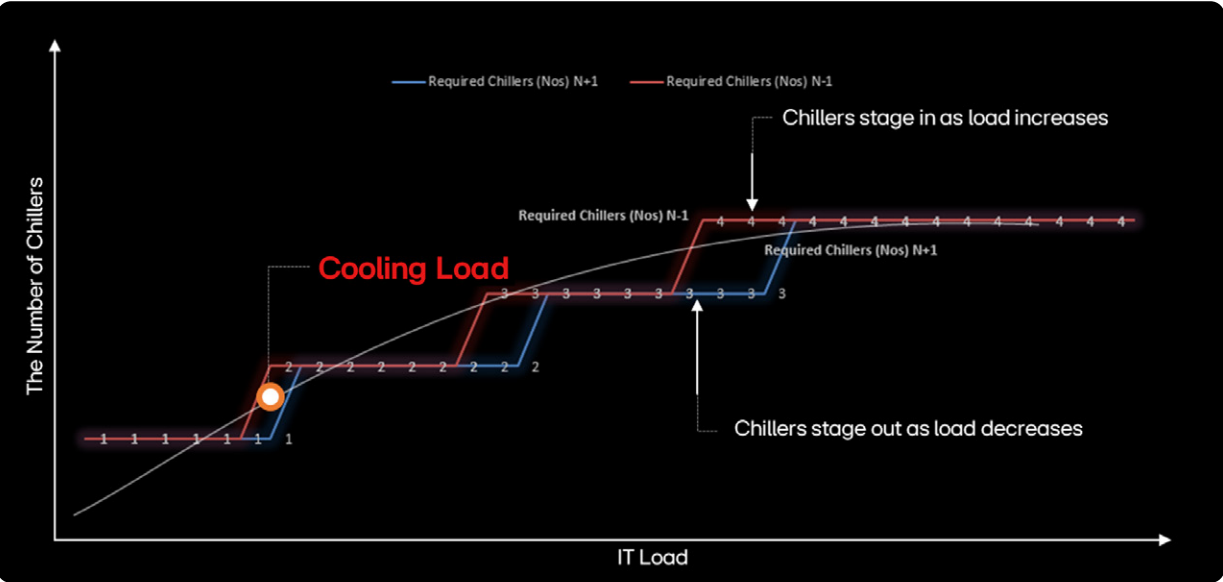
One chiller was shut down due to a fault in the connected cooling tower, and another chiller was shut down due to a power outage.

Fast Recovery integration in the chiller system minimizes chilled water supply downtime and ensures rapid restoration of cooling operations.

The chiller that was shut down due to the cooling tower fault remained out of service, a new chiller was started in its place, and the chiller affected by the power outage resumed operation after power was restored.

Demand-based Operation Technology

Chiller Staging Control automatically adjusts the number of operating chillers based on cooling load. This ensures efficient energy use while maintaining stable system performance



Operator Workstation (Option: Remote Monitoring) Independent Operation & Optimized Chiller Control

Enables remote monitoring and control of the DC CPM system, allowing operators to issue commands and manage plant operations in real time. When installed, it supports multi-user access through any standard web browser, so multiple operators can log in simultaneously from different systems for seamless, collaborative operation.

The DC CPM is designed to operate autonomously even if communication with upper systems such as the BMS or Operator Workstation is interrupted. It selects and manages key monitoring and control points for chiller capacity regulation, enhancing overall management efficiency and ensuring reliable, uninterrupted plant operation.

Operator Workstation

DC CPM

Data Center CPM	BECON controller
HMI	10.1" WVA / 1,024 * 600
Operator Workstation (Option)	BECON manager lite
Sensors	Static Pressure Sensor
	Differential Pressure Sensor
	Flow Meter
	Calorimeter
	Outdoor Temperature / Humidity Sensor
Actuator	Temperature Sensor
	On / Off Valve
	Modulating Valve
	VFD Driver
	Pressure Independent Control Valve

Intuitively Eye-catching HMI

Large screen can be increased visibility and control convenience. UX design with access to all functions from the main screen can make easy for user to control.

DC CPM

10.4-inch Electrostatic Full-touch Screen

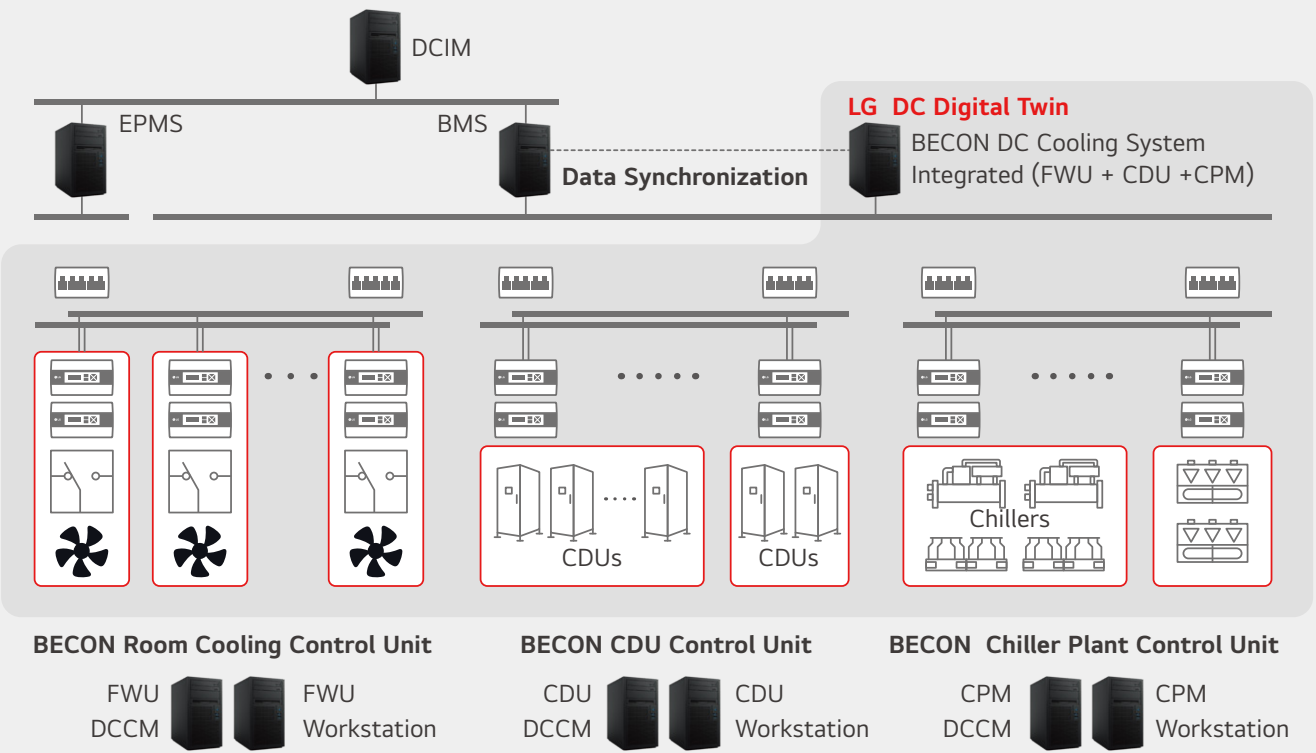
Functions

- Real-Time Energy Monitoring & Trend Analysis
- Advanced Scheduling & Control
- Alarm & Event Management
- User Access
- Integration

10.4-inch Electrostatic Full-touch Screen

DCCM

DCCM (Data Center Cooling Manager) is a differentiated platform that virtually reconstructs LG's cooling solutions for data centers.



CORE TECHNOLOGY



Simulation and Fault Diagnosis

By leveraging predictive simulations, DCCM proactively identifies potential faults and anomalies before they occur, thereby preventing system failures and ensuring continuous operational reliability.



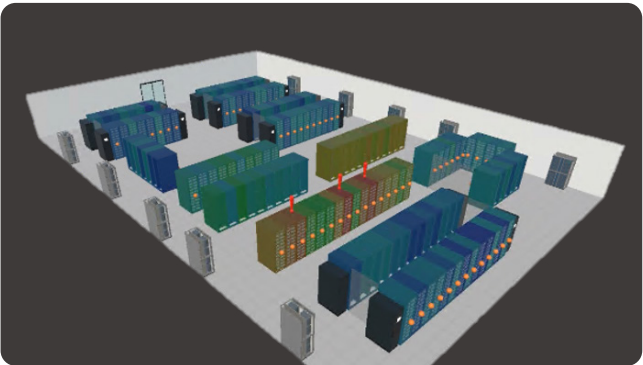
AI-driven Predictive Control

Utilizing AI algorithms, DCCM predicts load patterns and dynamically adjusts cooling operations to minimize energy consumption in real-time, optimizing efficiency and cost-effectiveness.



Enhanced Energy Efficiency

By transitioning operational strategies to a predictive model, DCCM realizes a sustainable energy optimization system, significantly improving overall energy efficiency and sustainability.



3D Visualization

Through advanced 3D visualization, DCCM provides an intuitive view of cooling conditions, enabling quick and comprehensive insights into operational status and facilitating more effective management.

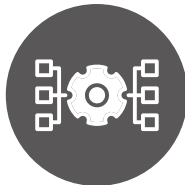
KEY FEATURES



Enhanced Reliability

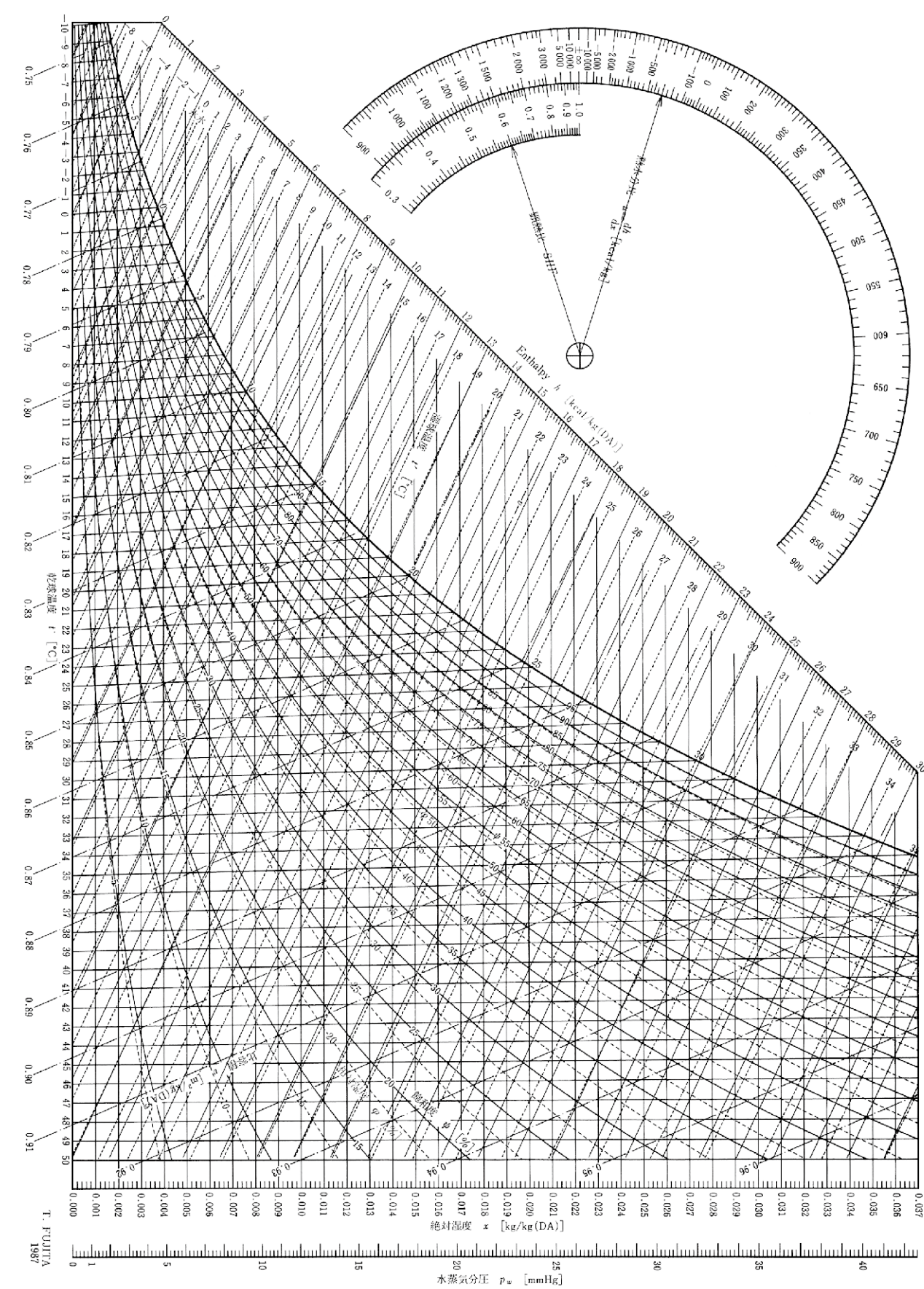


High Energy Efficiency



Easy Management

Psychrometric Chart



Unit Conversion Table

Pressure							
Pa	kgf / cm ²	lbf / in ²	atm	mmHg	mH ₂ O	inHg	ftH ₂ O
1	1.019 72 x 10 ⁻⁵	1.450 38 x 10 ⁻⁴	9.869 23 x 10 ⁻⁶	7.500 62 x 10 ⁻³	1.019 72 x 10 ⁻⁴	2.953 00 x 10 ⁻⁴	3.345 53 x 10 ⁻⁴
98 066.5	1	14.223 3	0.967 841	735.559	10	28.959 0	32.808 4
6 894.76	0.070 307 0	1	0.068 046 0	51.714 9	0.703 070	2.036 02	2.306 66
1.013 25 x 10 ⁵	1.033 23	14.695 9	1	760	10.334 5	29.921 3	33.898 5
133.322	1.359 51 x 10 ⁻³	0.019 336 8	1.315 79 x 10 ⁻³	1	0.013 595 1	0.039 370 1	0.044 603 3
9 806.65	0.1	1.422 33	0.096 784 1	73.555 9	1	2.895 90	3.280 84
3 386.39	0.034 531 6	0.491 154	0.033 421 1	25.4	0.345 316	1	1.132 92
2 989.07	0.030 48	0.433 528	0.029 499 8	22.419 8	0.304 8	0.882 671	1

Cooling Capacity				
W	usRT	JRT	kcal / h	Btu / h
1	0.284 3 x 10 ⁻³	0.259 0 x 10 ⁻³	0.859 8	3.412
3.517 x 10 ³	1	0.910 8	3 024	1.20 x 10 ⁴
3.862 x 10 ³	1.098	1	3 320	1.317 x 10 ⁴
1.163	3.307 x 10 ⁻⁴	3.012 x 10 ⁻⁴	1	3.968
2.931	0.833 x 10 ⁻⁴	0.759 x 10 ⁻⁴	0.252 0	1

Velocity					
m / s	km / h	m / h	ft / s	ft / h	mile / h
1	3.6	3.6 x 10 ³	3.281	1.181 x 10 ⁴	2.237
0.278	1	1 x 10 ³	0.9114	3.281 x 10 ³	0.6214
0.278 x 10 ⁻³	1 x 10 ⁻³	1	9.114 x 10 ⁻⁴	3.281	6.214 x 10 ⁻⁴
0.304 8	1.097	1.097 x 10 ³	1	3.6 x 10 ³	0.681 8
8.47 x 10 ⁻⁵	3.048 x 10 ⁻⁴	0.304 8	2.780 x 10 ⁻⁴	1	1.894 x 10 ⁻⁴
0.4470	1.609	1.609 x 10 ³	1.467	5.28 x 10 ³	1

Quantity of Heat					
J	kgf·m	kcal	PS·h	W·h	Btu
1	0.102	2.39 x 10 ⁻⁴	3.776 7 x 10 ⁻⁷	2.778 x 10 ⁻⁴	9.478 x 10 ⁻⁴
9.806 65	1	2.34 x 10 ⁻³	3.703 7 x 10 ⁻⁶	2.724 x 10 ⁻³	9.293 x 10 ⁻³
4.187 x 10 ⁶	426.9	1	1.581 x 10 ⁻³	1.163	3.968
2.647 8 x 10 ⁶	2.7 x 10 ⁵	632.54	1	735.5	2.51 x 10 ³
3.6 x 10 ³	367.10	0.860	1.359 6 x 10 ⁻³	1	3.412
1.055 1 x 10 ³	107.58	0.252	0.398 x 10 ⁻³	0.2931	1

Thermal Conductivity					
W / m·K	kJ / m·h·K	kcal / m·h·°C	Cal / cm·s·°C	Btu / ft·h·°F	Btu / in·h·°F
1	3.60	0.859 8	2.388 x 10 ⁻³	0.577 8	4.815 x 10 ⁻²
0.277 8	1	0.239 0	6.639 x 10 ⁻⁴	0.160 5	1.338 x 10 ⁻²
1.163	4.187	1	2.778 x 10 ⁻³	0.672	5.60 x 10 ⁻²
418.70	1.506 x 10 ³	360	1	241.9	20.16
1.731	6.232	1.488	4.134 x 10 ⁻³	1	8.333 x 10 ⁻²
20.77	74.8	17.86	4.96 x 10 ⁻²	12	1

Power						
kW	kg f·m / s	kcal / h	PS	HP	lb f·ft / s	Btu / h
1	101.97	860.0	1.360	1.341	735.56	3.415 x 10 ³
9.807 x 10 ⁻³	1	8.431	1.333 x 10 ⁻²	1.315 x 10 ⁻²	7.233	33.46
1.163 x 10 ⁻³	0.1186	1	1.58 x 10 ⁻³	1.56 x 10 ⁻³	0.857 6	3.968
0.735 5	75.0	632.3	1	0.986 3	542.4	2.509 x 10 ³
0.745 7	76.04	641.0	1.014	1	550.0	2.544 x 10 ³
1.356 x 10 ⁻³	0.138 3	1.184	1.844 x 10 ⁻³	1.820 x 10 ⁻³	1	4.627
2.931 x 10 ⁻⁴	2.989 x 10 ⁻²	0.252 0	3.984 x 10 ⁻⁴	3.93 x 10 ⁻⁴	0.216	1

Flow						
m ³ / s	m ³ / h	m ³ / min	ℓ / min	US gal / min	UK gal / min	ft ³ / h
1	3.6 x 10 ³	60	6 x 10 ⁴	1.585 x 10 ⁴	1.320 x 10 ⁴	1.271 x 10 ⁵
2.778 x 10 ⁻⁴	1	1.667 x 10 ⁻²	16.670	4.403	3.667	35.31
1.667 x 10 ⁻²	60	1	1 x 10 ³	264.2	220.0	2.119 x 10 ³
1.667 x 10 ⁻⁵	6 x 10 ⁻²	1 x 10 ⁻³	1	0.264 2	0.220	2.118 6
6.308 x 10 ⁻⁵	0.227 1	3.785 x 10 ⁻³	3.785	1	0.832 6	8.019 0
7.577 x 10 ⁻⁵	0.273 0	4.546 x 10 ⁻³	4.546	1.201	1	9.630
7.867 x 10 ⁻⁶	2.832 x 10 ⁻²	0.472 x 10 ⁻³	0.472	0.124 7	0.103 8	1