Vertiv™ Liebert® PCW

Chilled Water Perimeter Unit
from 25 to 400 kW

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

Vertiv™ Liebert® PCW | Chilled Water Perimeter Unit

Liebert® PCW is Designed to Lead the Thermal Management Market for Chilled Water Perimeter Units for All Data Center Configurations

Liebert PCW, thanks to its well-established design, minimizes running costs for the entire cooling system. All components and control strategies are enhanced to provide an extremely efficient solution for infrastructures facing the challenges of modern IT applications.

Liebert PCW, due to new advanced technologies, matches requirements for cooling continuity coming from the most trusted and approved certification authorities for data center design and operation. The Liebert PCW ensures precise and constant control of airflow, temperature, and humidity under all working conditions. Cooling continuity and reliability are key factors for Liebert PCW and mission critical infrastructures.

Liebert PCW adapts perfectly to each data center's room air condition and water temperature requirement. A wider operating range allows users to remain a step ahead of new challenges posed by data center requirements and climate change. Liebert PCW is an extremely flexible unit able to adapt to different site needs.

Liebert PCW uses algorithms developed and perfected over fifty years of business experience and comes now with a new 7" touch screen display for quicker and easier data readability.

Value of Liebert® PCW Range

Features

- Latest generation of EC fans
- Eurovent certified performance
- Pressure independent control valve
- Multiple enhanced coils
- Cooling override function
- Virtual Display

How You Benefit

- Powerful fans increase the cooling capacity at the same unit footprint.
- Delivers performance rating accuracy, certified by an independent organization.
- System energy efficiency increased due to a better water distribution.
- Ad-hoc coils to best suit the new data center market trends.
- Even in case of a control failure, the unit can guarantee cooling continuity.
- Through a web browser, all the functionalities of the standard display can be replicated.

Vertiv™ Liebert® PCW

At Vertiv we believe that being mindful of product design, development, use, and disposal are important to the longevity of our industry.

Checkout these environmentally conscious features of the Liebert® PCW:

- The unit design minimizes the aerodynamic impact of all the internal parts ensuring a significant 10% reduction in the internal air pressure drop that translates in reduced unit power consumption.
- The latest generation EC fans technology, compliant with the ErP directive, results in highly efficient units.
- The pressure independent control valve regulates and maintains a constant flow improving water distribution.

Vertiv™ Liebert® PCW-PW Versions

Configurations

- From 25 to 400 kW
- From 1 to 8 fans
- Single or Dual Circuit
- More than 4 air delivery configurations

Main Options:

- Touch Screen Display
- Pressure Independent Control Valves
- Dual power supply with Control Power Continuity
- Electrical/Water heating system
- Electrode, Infrared or Ultrasonic humidifier
- Air Economizer for Direct Freecooling
- Damper and Extension Hood

Cooling Continuity
Vertiv™ Liebert® PCW maximizes cooling continuity and reliability, matching the requirements coming from the most trusted and adopted certification authorities for data center design and operation.

Energy Efficiency
Vertiv™ Liebert® PCW is designed to set new efficiency standards on chilled-water cooling systems for data centers. The unit's internal design combines market-leading technologies and optimizes the aerodynamic impact of all the internal components.

Flexibility
Vertiv™ Liebert® PCW perfectly adapts to each data center's room air condition and water temperature requirements. This unit is extremely flexible, with regards to airflow configurations, chilled water connections type, and electrical arrangements.

Vertiv™ Liebert® iCOM™ Smart Control
The Liebert® iCOM™ control manages and optimizes the overall system. It is fully-programmable via an advanced and user-friendly touch display and can be linked with common BMS protocols, allowing remote supervision.

Vertiv™ Liebert® PCW | Chilled Water Perimeter Unit

Vertiv Re-designs The Chilled Water Perimeter Units For Non-Raised Floor Applications

The data center industry is experiencing fast-paced innovation. Hyperscalers, colocation facility providers, and other large data center owners and operators have led the way in implementing the latest compute, power, and cooling technology in their designs to meet growing market demand.

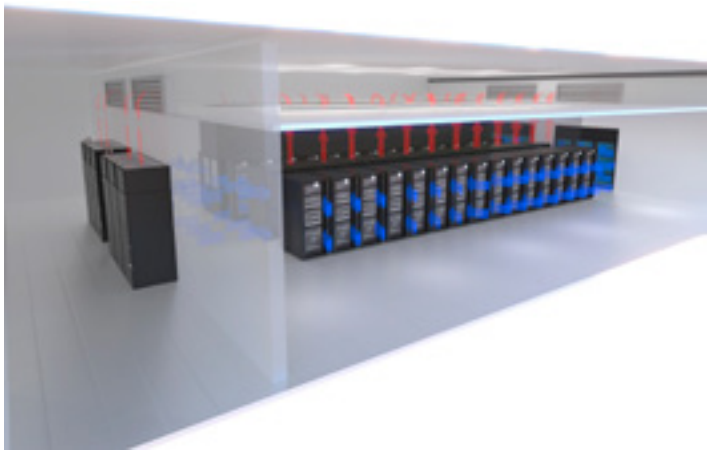
Simplifying data center design with simple slab floors enables data center owners to construct new white space more quickly and cost-effectively.

Vertiv has redesigned its standard Liebert® perimeter cooling solutions to meet the demands of non-raised floor applications. A fan is installed on the top of the unit. The units blow air from the coil section, exploiting this larger surface area and reducing air speed to create better airflow distribution.

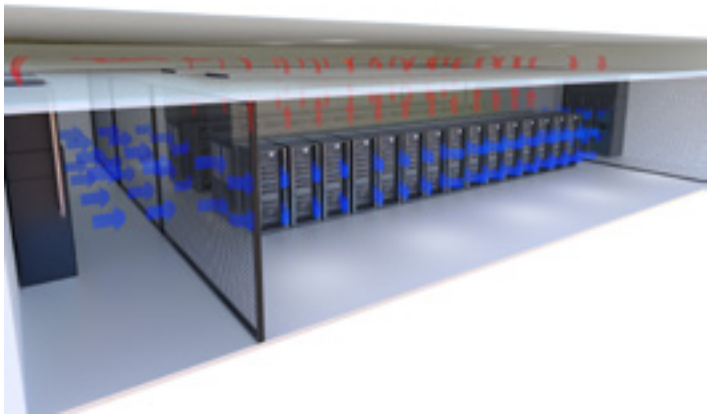
The Vertiv™ Liebert® PCW – PWM model is the answer to data center owners and operators, who are moving to the non-raised floor solutions. The PWM Model completes the Liebert® PCW family offering a product with a larger air delivery surface for a better air distribution.

"Don't start to design your datacenter from the product needs, but select the right product based on your data center needs."

Back Air Delivery



Frontal Air Delivery



Value of Vertiv™ Liebert® PCW – PWM Model

Features

- Wide air delivery surface
- Possibility to duct the return air
- Latest generation of EC fans
- Pressure independent control valve
- Cooling override function
- Virtual display

How You Benefit

- Reduces air velocity and allows a good air distribution inside the server room
- No pressurized service corridor and no hot environment for technicians
- New generation of EC fans improve unit efficiency at the same footprint
- System energy efficiency increased due to a better water distribution
- Cooling continuity is guaranteed even in case of a control failure
- All functionalities of the standard display can be replicated through a web browser

Vertiv™ Liebert® PCW-PWM Model Versions

Configurations

- From 150 to 250 kW
- From 3 to 4 fans
- Frontal and Back air delivery

Main Options:

- Touch Screen Display
- Pressure Independent Control Valves
- Dual power supply with Control Power Continuity
- Electrode humidifier
- Damper and Extension Hood

Cooling Continuity

With Vertiv™ Liebert® PCW – PWM model, airflow continuity is ensured until the last fan of the unit is running. This is a very important feature when the cooling unit is connected to the server room, as in the case of non-raised floor applications.

Vertiv™ Liebert® iCOM™ Smart Control

Liebert® iCOM™ Smart Control embeds a specific algorithm developed in order to better control temperature and airflow for non-raised floor applications.

Flexibility

Vertiv™ Liebert® PCW - PWM model confirms its extreme flexibility when considering airflow configurations: in the frontal air delivery configuration the unit can be installed inside the server room, while in the back air delivery configuration the PWM model can be installed in the service corridor.

Energy Efficiency

Vertiv Liebert® PCW - PWM model confirms Liebert PCW family efficiency standards on chilled-water cooling systems for data centers.
Its wider surface area reduces air velocity and allows a good air distribution inside the server specifically in the case of non-raised floor applications

Energy Efficiency

- The unit design minimizes the aerodynamic impact of all the internal parts; any detail like coil shape, coil size, coil angle, electrical panel design, fan separator has been optimized, ensuring a significant 10% reduced internal air pressure drop that immediately becomes a benefit in terms of reduced unit power consumption.
- As a result of the latest evolution of the EC fans technology, unit energy efficiency improves; utilizing powerful fans, unit cooling capacity increases more than 5% with the same unit footprint.
- Pressure independent control valves regulate and maintain a constant flow to the unit as water pressure in the system varies. Delivering better water distribution and thus increasing overall system energy efficiency.

Cooling Continuity

- The cooling override function is the best answer to increase the unit reliability, in case of control failure and during the re-booting time, limiting cooling interruptions to the IT equipment.
- The airflow continuity is guaranteed until the last unit fan is able to run.
- In case of control sensor failure, the unit automatically adapts in order to grant the necessary cooling/airflow continuity. A redundant sensor can be installed and activated only if the first one breaks or is missing.

Flexibility

- Multiple enhanced coils permit to best suit the different market trends, in terms of room air conditions and water temperature requirements, adapting perfectly to each data center's working condition.
- Vertiv™ Liebert® PCW-PW range offers more than 4 airflow configurations (only frontal and back air delivery for non-raised floor applications), chilled water connections in three different positions with different terminals, allowing the units to adapt to any data center layout and configuration.
- Electrically, units can be fed with two power sources combined with an ATS for full back-up or with two separate lines, one for the main devices and the other for the auxiliaries. Control power continuity can keep the CPU and BMS on for at least 1 minute during a power outage.

Vertiv™ Liebert® iCOM™ Smart Control

- Ready for Teamwork of up to 32 units with optimization based on installation type, furthermore it allows for advanced control functionality (sharing sensor's data, standby rotation, lead-lag, cascade operation and rotating master function).
- The Liebert® iCOM™ software embeds a comprehensive algorithm library with more than 10 different strategies to control temperature/humidity & airflow developed for adapting perfectly to the different data center solutions.
- A specific algorithm has been developed in order to better control temperature and airflow in case of non-raised floor applications.
- Unit power consumptions and cooling gross capacity can be calculated thanks to specific algorithms and the direct communication between the control, sensors and the EC fans motor. This allows the monitoring of the unit energy efficiency through the BMS system.

Rely on a Higher Level of Service Expertise for Thermal Management in Your Data Center

Who is better prepared to meet the service needs for your thermal management system than the company that pioneered the precision air conditioning market? We're a world leader in research and development of innovative products that protect mission-critical thermal applications and have been supporting data centers around the world for decades.

After all, there's a vast difference in the expertise necessary to address the comfort cooling needs of a normal building and the thermal management needs of your sensitive and sophisticated data center. An incorrect repair procedure by improperly trained technicians, or the use of non-genuine parts, can have a profound effect on your equipment performance, your data center availability, and your energy costs.

The factory trained and certified technicians of Vertiv know the difference. We are equipped to maximize the performance and efficiency of your thermal management system as no one else can.

Supporting Your Business Around the Globe

We bring our combination of strengths to life on a global scale, ensuring that we're able to serve you wherever you do business. Vertiv has the largest factory-trained service force with more than 3,300 field engineers, together with the capability to support you remotely with a comprehensive range of remote Services and Software Solutions. Our service team members are located in virtually every major country across the globe and are backed by more than 250 technical support/response personnel. This means that no matter where you operate, you are covered by the most knowledgeable engineers and technicians available, giving you relief from any concern.

Our Presence

GLOBAL PRESENCE

Manuf. and Assembly Locations **23**

Service Centers **290+**

Service Field Engineers **3,300+**

Technical Support/Response **250+**

Customer Experience Centers/Labs **14**

AMERICAS

Manuf. and Assembly Locations **10**
Service Centers **170+**
Service Field Engineers **1,500+**
Technical Support/Response **105+**
Customer Experience Centers/Labs **5**

EUROPE, MIDDLE EAST AND AFRICA

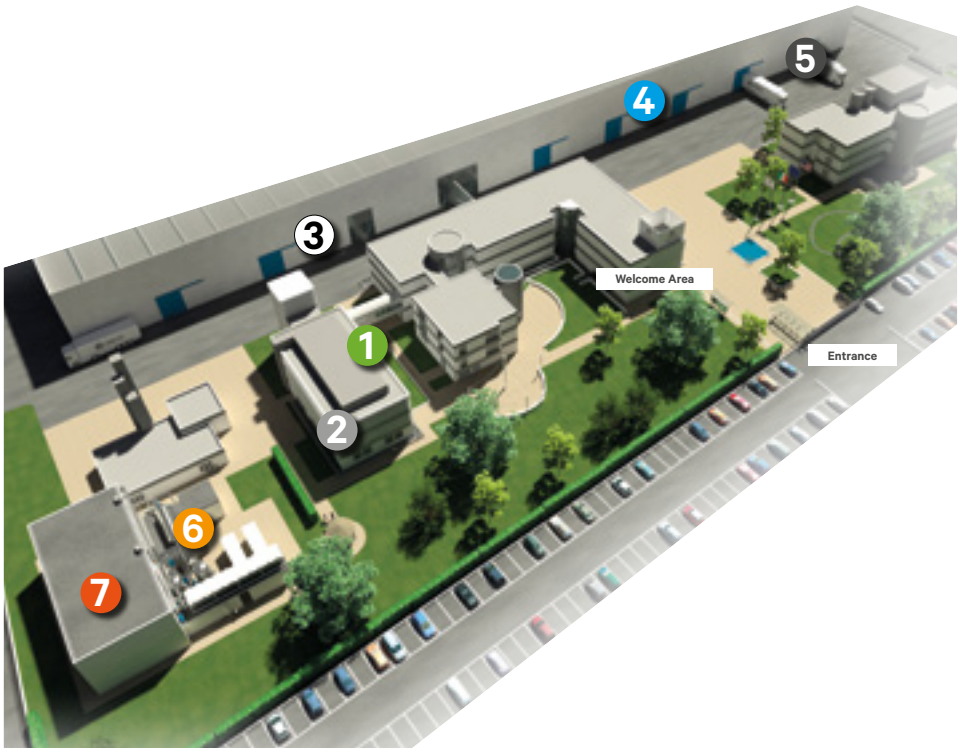
Manuf. and Assembly Locations **9**
Service Centers **65+**
Service Field Engineers **620+**
Technical Support/Response **75+**
Customer Experience Centers/Labs **5**

ASIA PACIFIC AND INDIA

Manuf. and Assembly Locations **4**
Service Centers **55+**
Service Field Engineers **1,190+**
Technical Support/Response **70+**
Customer Experience Centers/Labs **4**

Vertiv's Customer Experience Center located in Tognana (Padova - Italy)

The site includes 7 different laboratories and is specifically designed for customers to interact with Thermal Management data center technologies. Lab 3 is dedicated to test Vertiv™ Liebert® PCW-PW Models up to 200 kW, while Lab 7, the Large Indoor Innovation Lab, is dedicated to validate units up to 400 kW.



1 R&D Validation Lab 1

The Research & Development Validation Lab 1 is specifically designed to test floor-mount units and can balance a thermal load of up to 150 kW with a chamber air temperature between 0°C and 60°C.

2 R&D Validation Lab 2

Designed for conditioners belonging to the Telecom sector, the Research & Development Validation Lab 2 includes two different testing chambers: one simulating internal ambient conditions from 0°C to 60°C and the other simulating external ambient conditions from -32°C to 60°C. This validation area can balance a thermal load of up to 100 kW (50 kW in each room).

3 Floor-Mount Validation Lab

The lab is equipped with a highly automated testing chamber, this validation area can balance a thermal load of up to 200 kW and can simulate a test environment within a temperature range of 0°C to 60°C.

4 Large Outdoor Packaged Innovation Lab

Dedicated area to test the state-of-the-art Liebert EFC - Vertiv's highly efficient indirect evaporative freecooling unit. Testing parameters include IT loads of up to 450 kW and an airflow of up to 120,000 m^3 per hour at any external ambient temperature required to simulate typical peak conditions across the EMEA region.

5 Freecooling Chiller Validation Area

The Freecooling Chiller Validation Area is able to balance a thermal load of up to 1600 kW with a chamber air temperature between 20°C and 50°C and chiller water set point between 5°C and 20°C.

6 Adiabatic Freecooling Chiller Innovation Lab

This latest designed lab can test units with cooling capacities up to 1.5 MW with state-of-the-art accuracy in a broad range of working conditions, from -10°C to +55°C, also for adiabatic units.

7 Large Indoor Innovation Lab

This latest designed lab can test up to 400 kW and 100,000 m3/h, with operating conditions between +10°C and 50°C.

Vertiv™ Liebert® PCW - Standard Height			PW025	PW030	PW035	PW040	PW045	PW060	PW070	PW080	PW095	PW110	PW145	PW170
Single Circuit Cooling Capacity	Net Sensible Cooling Capacity Legacy Coil	kW	29	34.3	38.1	44	47.9	68.5	74.6	87.2	105.4	120.6	144	170.9
	Net Sensible Cooling Capacity Smart Coil	kW	-	35.7	-	45.8	-	77.2	-	91.6	-	126	143	170.4
	Net Sensible Cooling Capacity Eco Coil	kW	28.4	-	39.2	-	51.5	68	76.1	-	104.6	-	-	-
Dual Circuit Cooling Capacity	Net Sensible Cooling Capacity Legacy Coil	kW*	-	-	-	35.3	-	52.7	-	63.7	-	87.2	99.7	119.3
Power input		kW	1.39	1.83	1.45	1.69	1.56	2.85	2.67	3.63	4.2	5.37	6	7.39
Airflow Range [%]		m3/h	2600 12000	2900 12000	3400 16000	3400 16000	5300 18000	5400 27000	6700 30400	7200 30000	9000 41000	10300 42000	12000 50000	13000 55000
Spare Capacity		%	25	15	20	20	20	20	25	15	20	20	15	20
Dimension	Length	mm	844	844	1200	1200	1750	1750	2050	2050	2550	2550	2950	3350
	Width	mm	890	890	890	890	890	890	890	890	890	890	890	890
	Height	mm	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970
Unit Configuration	Down Flow UP Fans Over the Raised Floor		•	•	•	•	•	•	•	•	•	•	•	•
	Up Flow		•	•	•	•	•	•	•	•	•	•		
	Frontal		•	•	•	•	•	•	•	•	•	•		
	Downflow Down Fans in Raised Floor				•	•	•	•	•	•	•	•	•	•

Operating Modes
Legacy - RAT 26°C 40% RH; Water I/O 10°C - 15°C; ESP 20Pa; Downflow Up; Fan Advance - HE
Smart - RAT 35°C 30% RH; Water I/O 18°C - 26°C; ESP 20Pa; Downflow Up; EC Fan Advance - HE
Eco - RAT 30°C 30% RH; Water I/O 8°C - 15°C; ESP 20Pa; Downflow Up; EC Fan Advance - HE
* with one circuit running

Vertiv™ Liebert® PCW - Extended Height			PW046	PW066	PW091	PW136	PW161	PW201	PW400
Single Circuit Cooling Capacity	Net Sensible Cooling Capacity Legacy Coil	kW	49.4	75.9	95.9	134.9	164.3	206	400
	Net Sensible Cooling Capacity Smart Coil	kW	53.9	61.7	73.1	103.2	119.2	147.3	400
Dual Circuit Cooling Capacity	Net Sensible Cooling Capacity Legacy Coil	kW*	39.9	61.7	73.1	103.2	119.2	147.3	
Power input		kW	2.22	2.41	3.15	4.95	6.48	9.23	15.7
Airflow Range [%]		m3/h	4600 - 18000	7600 - 31000	8300 - 33000	12000 - 47000	13000 - 50000	14600 - 61000	25000-102000
Spare Capacity		%	10	30	20	20	10	10	10
Dimension	Length	mm	1200	1750	2050	2550	2950	3350	3850
	Width	mm	890	890	890	890	890	890	1780
	Height: Coil + Fan	mm	1970 + 600	1970 + 600	1970 + 600	1970 + 600	1970 + 600	1970 + 600	1970+750+750
Unit Configuration	Filter Plenum								
	Down Flow UP Fans Over the Raised Floor		•	•	•	•	•	•	
	Down Flow UP Frontal air Delivery		•	•	•	•	•	•	
	Down Flow UP Back air Delivery		•	•	•	•	•	•	
	Up Flow		•	•	•				
	Downflow Down Fans in Raised Floor		•	•	•	•	•	•	•
	Downflow Down Back air Delivery		•	•	•	•	•	•	

Operating Modes
Legacy - RAT 26°C 40% RH; Water I/O 10°C - 15°C; ESP 20Pa; Downflow Up; Downflow Down for PW400; EC Fan Advance - HE
Smart - RAT 35°C 30% RH; Water I/O 18°C - 26°C; ESP 20Pa; Downflow Up; Downflow Down for PW400; EC Fan Advance - HE
* with one circuit running

Vertiv™ Liebert® PCW | Chilled Water Perimeter Unit

Vertiv™ Liebert® PCW - High Chilled Water DT			PW51W	PW50W	PW60W	PW70W
Single Circuit Cooling Capacity	Net Sensible Cooling Capacity High Technology Coil	kW	111,4	135,7	152,3	173,7
Dual Circuit Circuit Cooling Capacity	Net Sensible Cooling Capacity High Technology Coil	kW*	-	99.5	112.7	128.3
Power input		kW	4,78	4,99	5,47	6,7
Airflow Range [%]		m3/h	15000 - 47500	15000 - 47500	15000 - 50000	15000 - 60200
Spare Capacity		%	25	15	10	15
Dimension	Length	mm	2550	2550	2950	3200
	Width	mm	1050	1050	1050	1050
	Height: Coil + Fan	mm	2350 + 600	2350 + 600	2350 + 600	2350 + 600
Unit Configuration	Downflow Down Fans in Raised Floor		•	•	•	•
	Downflow Down Back air Delivery		•	•	•	•

Operating Modes

High Temperature - RAT 35°C 30% RH; Water I/O 20°C - 32°C; ESP 20Pa; Downflow Down - Open Door; EC Fan Advance - HE

* with one circuit running

Vertiv™ Liebert® PCW - PWM for Non Raised Floor Application

	Unit		PWM15	PWM25
Single Circuit - Cooling Capacity	Net Sensible Cooling Capacity - Smart Coil	kW	150	250
Power input		kW	7.07	15.3
Airflow Range [%]		m3/h	15000 - 52000	25000 - 71000
Spare Capacity		%	12%	5%
Dimensions	Length	mm	2550	3400
	Width	mm	1050	1050
	Height: Coil + Fan	mm	3050	3050
Unit Configuration	Frontal Air Delivery		•	•
	Back Air Delivery		•	•

Operating Modes
Back Air Delivery - Smart Coil - RAT 36°C 30% RH; Water I/O 18°C - 26°C; ESP 50Pa
EC Fan Advance - HE

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