

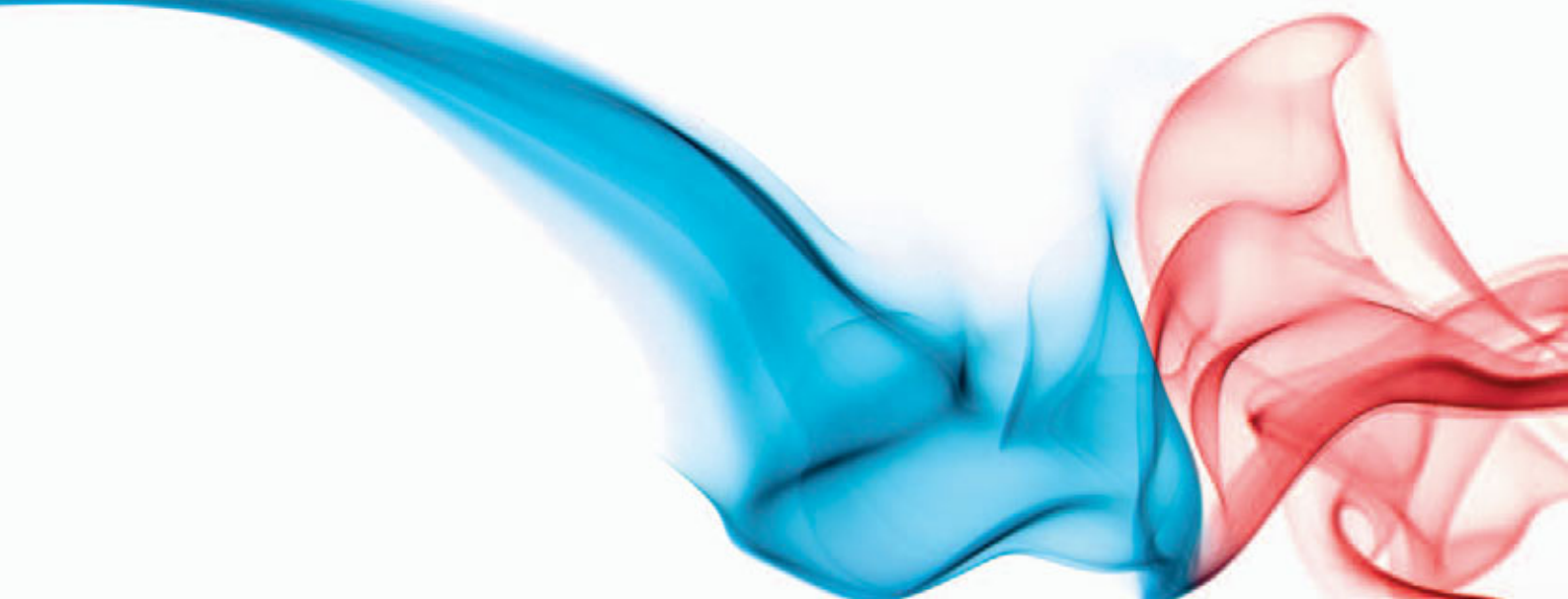
Precision Cooling for
Business-Critical Continuity™

Liebert® PCW

Cool the Cloud




EMERSON™
Network Power



Whether a data center houses three or 1000 IT racks, deployment of new technologies with high power densities are impacting the power and cooling systems that business-critical servers and communications devices depend on for their performance and reliability.

■ **The critical infrastructure systems from Emerson Network Power allow customers to respond to changes** in density, capacity and availability while achieving greater operating flexibility, higher system availability and lower total costs of ownership.

■ **Emerson Network Power delivers innovative solutions through 12 Centers of Expertise**, distinct areas of breakthrough products and services that help determine what is needed in relation to the application. Supported by a global network in more than 150 countries, backed by local service and support from more than 2,000 certified professionals, Emerson Network Power is uniquely positioned to provide systems and integrated solutions wherever our customers are located.

Emerson Network Power understands the challenges

of setting up the right infrastructure to support business-critical data center operations and helps respond to any demand by providing innovative solutions, allowing customers to concentrate on their business requirements.

■ **Liebert® PCW for data centers using chilled water as cooling fluid** typically range from 200 kW up to 4-6 MW. The overall solution encompasses the cooling unit as well as direct freecooling and Freecooling Chillers, delivering the best efficiency to ensure data center reliability and availability.



Liebert PCW
PowerLine

Liebert® PCW designed
for the lowest air resistance



*Liebert® PCW:
Precision
Cooling
Technology
Serving
the Cloud.
Energy efficiency,
improved
performance and
reduced operating
costs are the main
goals for data
centers today.*

■ **The evolution of virtualization technologies** has enabled data center managers to maximize resource allocation and agility by consolidating multiple applications onto a single server. The maturity of virtualization technology has facilitated the development of robust, virtualized network architectures - “clouds” - where resources are leveraged to provide on-demand, at-scale access to a variety of abstract IT resources.

■ **From a business perspective, the ability to scale** infrastructure resources to support rapid growth whilst ensuring business efficiency, is critical. Because the cloud’s virtualization technology facilitates a dynamic computing environment within a “static” foundation (the server), rapid changes in computing load translate to substantial increases in

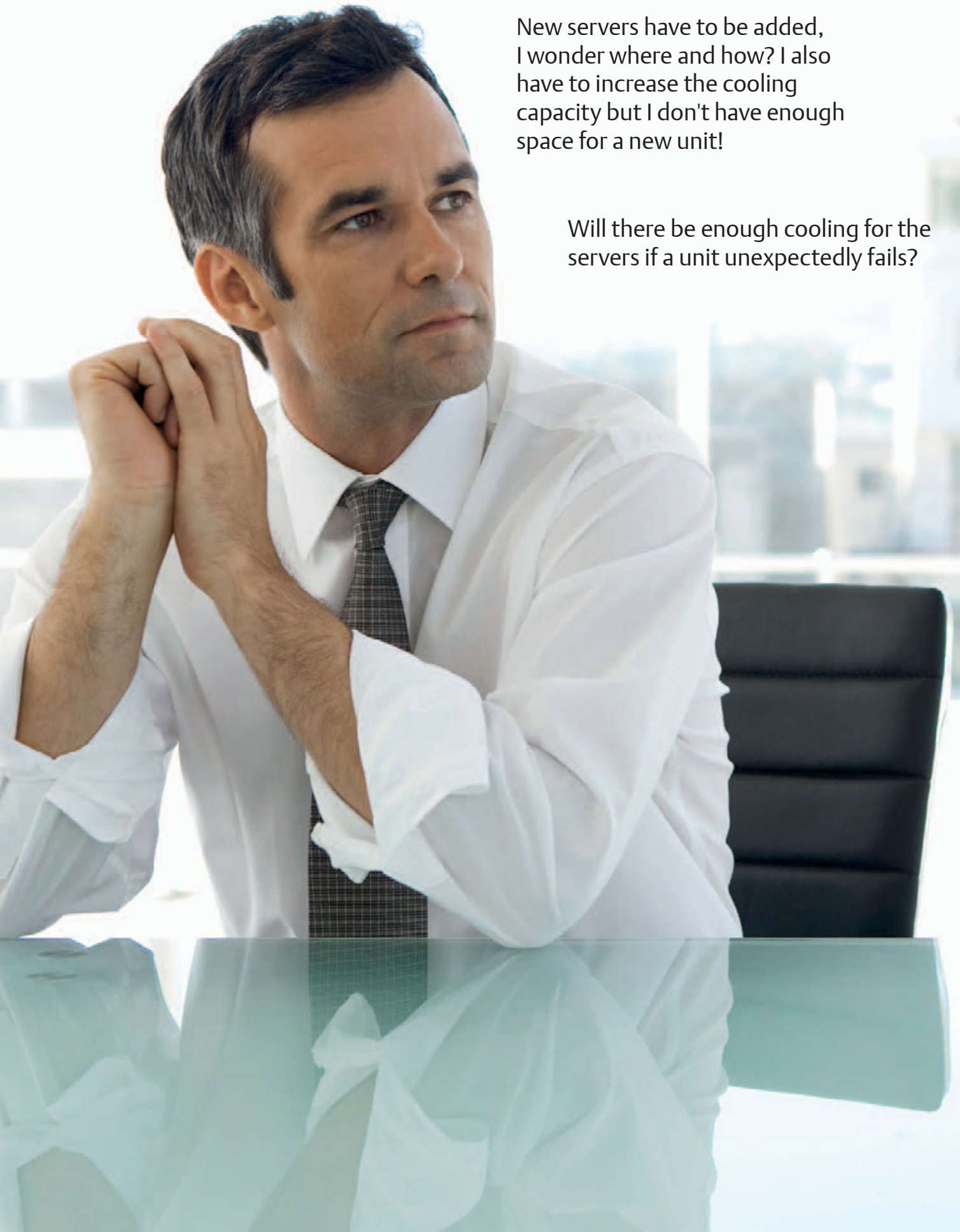
power consumption and the need for adequate heat dissipation. If not managed adequately, this can place additional stress on the data center’s infrastructure, resulting in an increased risk of system failures. Recognizing vulnerabilities of existing facilities before embarking on a cloud deployment gives the opportunity to potential cloud computing adopters to strengthen critical systems.

■ **Maintaining optimum availability is essential.** Increased rack densities coupled with high computing loads may result in “hot spots” which have the potential to impact the availability of virtualized servers, if not managed correctly. For this reason enterprises must ensure that critical systems are backed up with adequate cooling support optimized for virtualized, high-density environments.

This data center is running too hot... or is it colder than needed and that's why the bills are so high?

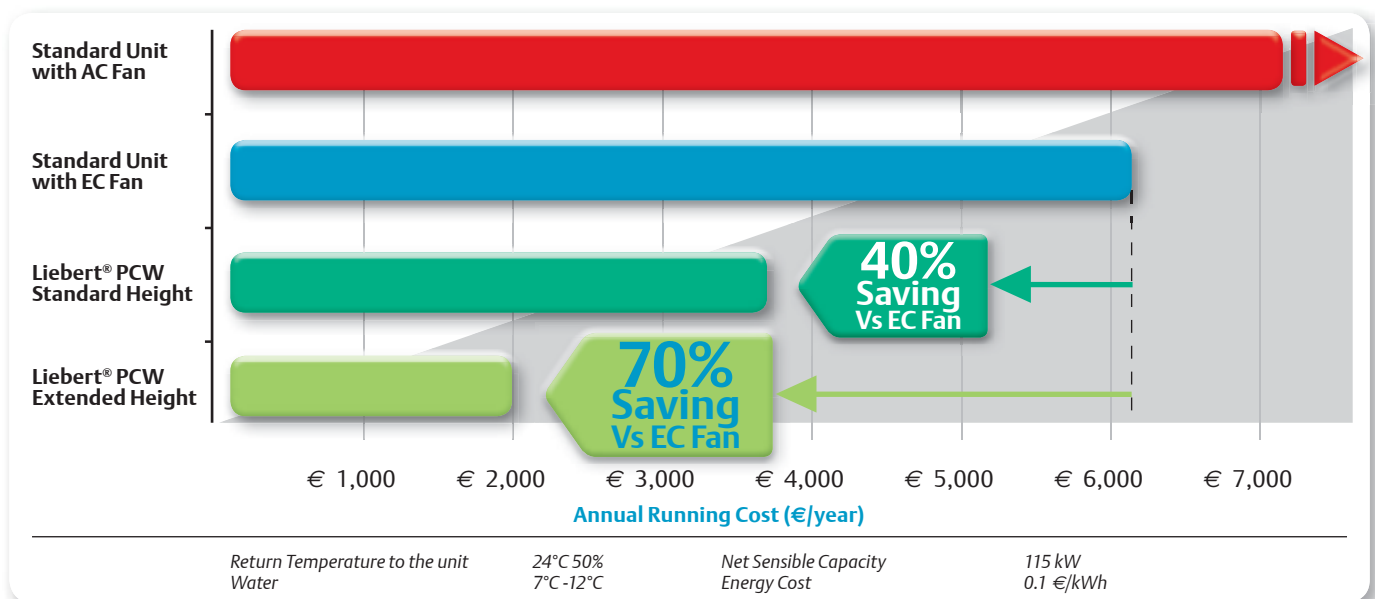
New servers have to be added, I wonder where and how? I also have to increase the cooling capacity but I don't have enough space for a new unit!

Will there be enough cooling for the servers if a unit unexpectedly fails?





Liebert® PCW: Cloud-Ready Precision Cooling for Maximum Energy Saving



Key Features

Unique integrated aerodynamic design to reduce fan power consumption

New coil design with enhanced efficiency

New high efficiency filters, providing class F5 filtration, as well as up to half the pressure drop of the more commonly used G4 (allowing improved filtration for increased performance)

New Liebert® EC Fan 2.0

Standard Height Configuration

Larger coil and filters to further reduce pressure drop

Fans located on the raised floor

Extended Height Configuration

The impressive energy saving performance achieved by Liebert® PCW is maintained when it forms part of an integrated data center solution. The Liebert® PCW's unique, cutting-edge technology delivers the cooling capacity required by the servers to ensure business continuity. Today's IT infrastructures, facing dynamic heat loads, have to rely on trustworthy cooling solutions, performing at their best whatever the circumstances.

Liebert® PCW, as part of the SmartAisle™ cooling solution, is the best response to data center cooling demands and minimizing operating costs.



Liebert® PCW Sets a New Standard in Energy Efficiency Amongst Chilled Water Data Center Applications. All Components Have Been Optimized to Provide an Extremely Efficient Solution Both for Conventional Computer Rooms and for Infrastructures Facing the Challenges of Modern IT Applications.



High Efficiency

As a result of the optimized aerodynamic design (minimum internal pressure drops), the new Liebert® EC Fan 2.0 and the new automotive high efficiency filters, Liebert® PCW can perfectly match the server heat load with minimum power consumption. Liebert® PCW also minimizes the running costs of the cooling system.



Liebert® EC Fan 2.0

The new generation of fans are the core of the Liebert® PCW, dramatically reducing the noise level and increasing the efficiency of the unit.



Unit Aerodynamic Design - A New Way to Look at Aerodynamics

Liebert® PCW, the ultimate novelty in precision cooling design, presents a unique inner aerodynamic architecture - from the coil angle to the electrical panel - achieving an outstanding competitive advantage and state-of-the-art efficiency.



Cooling and Power Energy Meters - Only What Is Measured Can Be Controlled

Measurement is key to control. The accurate metering provided by Liebert® PCW gives users the advantage of controlling the cooling capacity, the power input and all the parameters that simplify the management of the data center, thus ensuring continued infrastructure cooling even in the unlikely event of a unit failure.



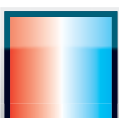
Ultrasonic Humidifier - The Efficient Humidification Technology

Liebert® PCW cutting-edge technology allows each of its components to save energy while delivering the cooling performance that data centers need today. The infrared and the electrode boiler humidifier are two efficient options made available.



iCOM® Control - When Smart Means Efficient

Smart mode is a control algorithm developed for Smart Aisle™ applications (Cold Aisle containment) meeting the cooling and airflow needs of the servers without wasting a single Watt on unnecessary cooling or air movement.



Freecooling Chillers & Supersaver - Optimizing System Efficiency

Freecooling Chillers take advantage of low external temperatures to chill water. The Supersaver Evolution functioning mode enables the use of Freecooling to be maximized. Whenever possible the system will automatically raise water temperatures as thermal loads fall, aligning cooling capacity with demand, thus increasing system efficiency and Freecooling time.

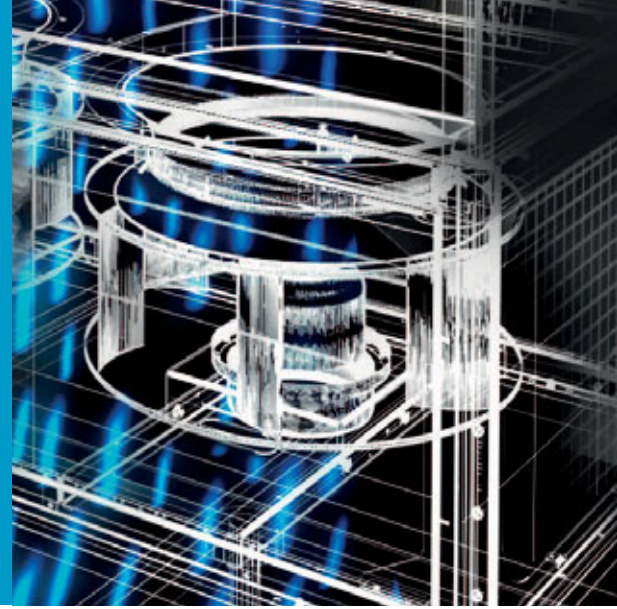


Whatever the Site Characteristics, Choose the Liebert® PCW to Meet Your Needs



Site Characteristics	Large and Medium		Small
	Data Center with raised Floor (>600mm)	Data Center with raised Floor (<600mm)	Data Center without Raised Floor
No space constraints <ul style="list-style-type: none"> - Fans cannot be installed under the raised floor - No height limits 	Liebert® PCW Extended Down		
<ul style="list-style-type: none"> - Fans cannot be installed under the raised floor - No height limits 	Liebert® PCW Extended Up - Downflow	Liebert® PCW Extended Up - Downflow	Liebert® PCW Extended Up - Upflow
<ul style="list-style-type: none"> - Fans cannot be installed under the raised floor - Height limits 	Liebert® PCW Downflow	Liebert® PCW Downflow	Liebert® PCW Upflow
Market standard: Non-extended unit with EC Fan Conventional technology: unit with AC Fan			

Liebert® PCW patented technology puts it at the forefront of data center precision cooling solutions in terms of efficient performance and reduced operational costs.



Technical

Technical /
UPS Room

Service

Service Corridor



**Liebert® PCW
Extended
Up - Frontal Air
Delivery**



**Liebert® PCW
Extended
Up - Back Air
Delivery**

**Liebert® PCW
Upflow**



■ Liebert® PCW Extended Down

Large and medium data centers are normally provided with a raised floor with at least 600 mm clearance. This is the ideal application for this unit, reducing operating costs by up to 70% if compared to a non-extended standard market solution with EC Fans.

■ Liebert® PCW Extended Up Downflow

For those sites with space constraints (raised floor height lower than 600 mm) but without any limit to the height of the roof (more than 3 m), **Liebert® PCW Extended Up** in Downflow air configuration is the ideal solution, reducing operating costs by up to 50%.

■ Liebert® PCW Extended Up Upflow

Liebert® PCW Extended Up Upflow achieves the same performances as the Downflow version, when a raised floor is not available. It is the perfect solution for UPS or technical rooms.

■ Liebert® PCW Extended Up frontal air delivery

Whenever the floor-mount precision cooling unit is to be installed inside a UPS or a technical room, the **Liebert® PCW Extended Up** with frontal air delivery offers the best performance leading to a 50% reduction in operating costs.

■ Liebert® PCW Extended Up back air delivery

If the service corridor is the only available space to install the floor-mount unit, **Liebert® PCW Extended Up** back air discharge is the recommended configuration to overcome the space constraints and achieve a reduction of up to 50% in operating costs.

■ Liebert® PCW Downflow

This is the ideal configuration for sites where the floor is raised by at least 600 mm, and the ceiling is at least 2.5 m high. The Liebert® PCW Downflow operates more efficiently when compared with a conventional EC Fan unit, as it achieves a 40% saving in operating costs.

■ Liebert® PCW Upflow

Where there is no raised floor and the ceiling is at least 2.5 m high, the **Liebert® PCW Upflow** is the ideal solution to cut operating costs by up to 40%.

*Liebert® iCOM®
is a Control software
in Continuous
Evolution. The
iCOM® Device,
Featuring a Special
Control Algorithm
Ensuring Top
Reliability in
All Conditions,
Manages the
Operation of the
Liebert® PCW units.*

The floor-mount and Freecooling Chiller unit communicate with each other through the Supersaver Evolution functioning mode which enables the two systems to be balanced and deliver the best performance.

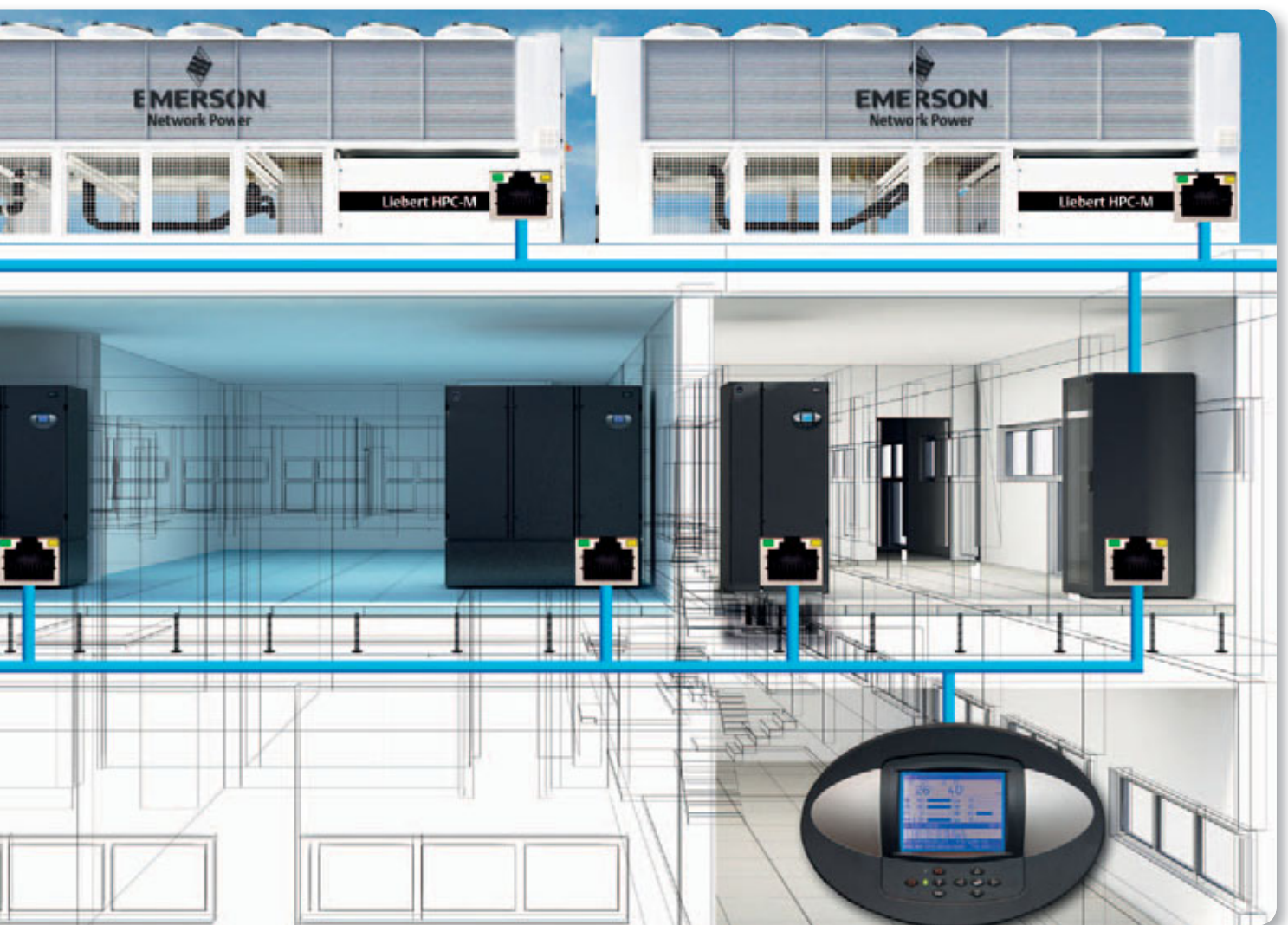
Unit to Unit Communication

iCOM® directly connects with the facility network (Ethernet) and enables communication between multiple Liebert® PCW units for synchronized operation, guaranteeing higher reliability and precision cooling room control.

Liebert® PCW units with graphic display may be centrally monitored and controlled with the optional wall mounted display. The display allows access to the unit via the Network, making coordination between the Liebert® PCW units within the same room possible as a result of the integrated Ethernet connection. The self monitoring of redundant units alternates standby positions and gives



Smart mode is a control algorithm developed for Smart Aisle™ applications, (Cold Aisle containment) meeting the exact cooling and airflow needs of the servers without wasting a single Watt on unnecessary cooling or air movement.



priority to possible hot spots. The high-level supervision of multiple units allows them to work together as a single system to optimize room temperature and humidity. This is of particular importance when the EC Fan is considered. EC fan power consumption functions according to the square-cube law, so that having five units running at 80% instead of four at 100%, means the energy used by the additional unit is cut by 50% and the total energy used by the entire group by 36%. iCOM® manages the reduction of fan speed whenever operation at full capacity is not required.



Liebert® PCW: Remote Monitoring Service and Connectivity

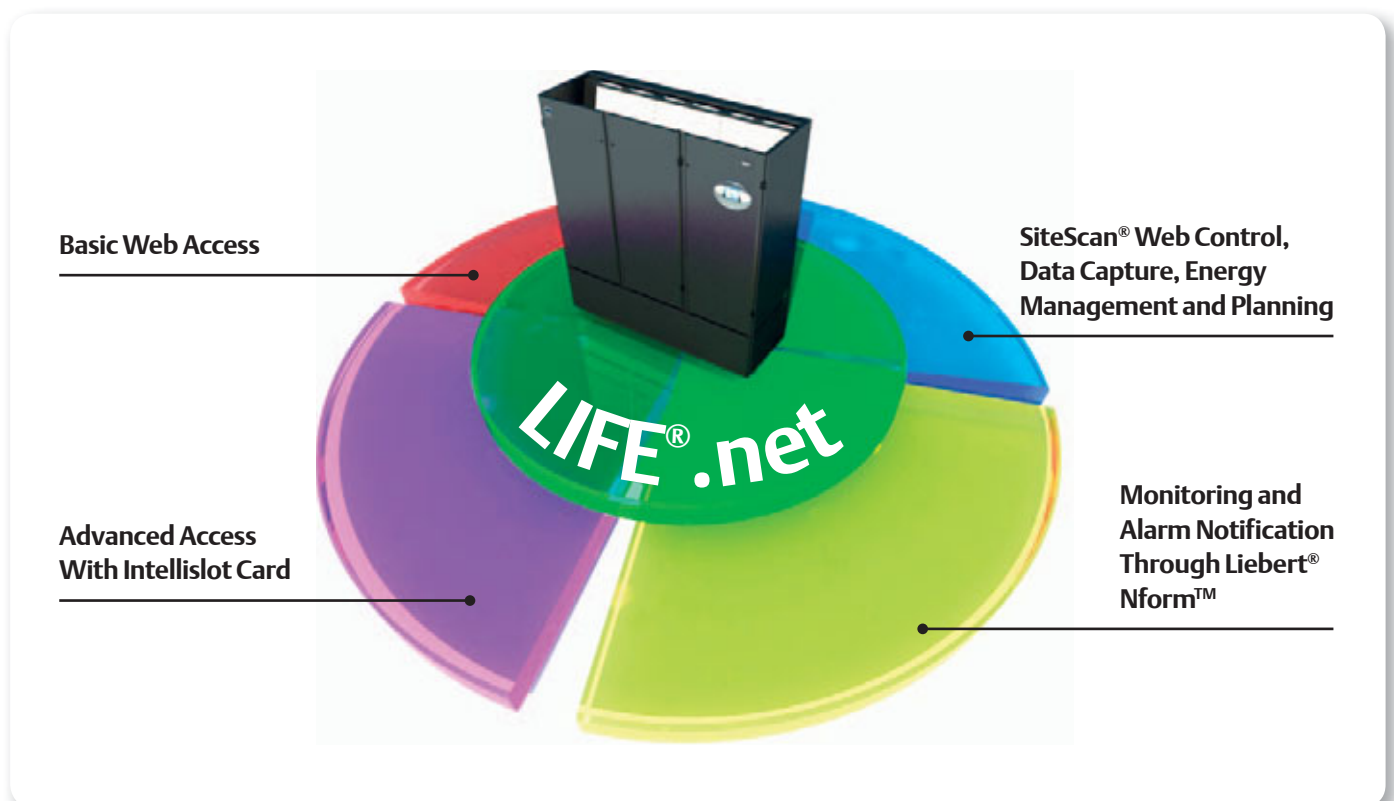
■ Chloride LIFE®.net Remote Monitoring and Diagnostic Service

It is essential that your critical cooling system is maintained in an optimum state of readiness at all times. With Chloride LIFE®.net remote monitoring and diagnostics, Emerson Network Power Services monitor and prevent possible alarm conditions. This allows effective proactive maintenance and fast incident response, giving

customers complete security and peace of mind.

Service center engineers are permanently on hand to provide immediate fault analysis and appropriate corrective action.

- The customer will be informed about the status of the installation through detailed reporting providing valuable information on unit functioning and trends over any selected period of time.





■ **Basic Web Access**

Basic operational information can be made available through the monitoring feature offered by the iCOM® Control over Ethernet. A web browser is the only requirement needed for the unit to communicate directly with the local or remote web interface.

■ **Monitoring and Control Through Existing Network Via your Web Browser**

The Liebert® PCW system can be fitted with a Liebert® IntelliSlot Web Card allowing full advantage to be taken of the Ethernet network and remote monitoring from your computer desktop, network operations center or any network access simply utilizing a standard web browser. A standard web browser, via HTTP protocol or Network Management System software via SNMP protocol, can be used to access the unit information.

■ **Monitoring Integration with Existing Building Management System**

If required, Liebert® PCW may be integrated with an existing Building Management System, while the IntelliSlot 485 Cards provide Modbus RTU and Modbus

TCP compatibility. SCADA support is completed through the Bacnet over IP card.

■ **Liebert® Nform™ Software Centralized Management**

As business grows, critical equipment infrastructure expands, thus the need for centralized management of any equipment is key to business success. Connecting to equipment in the distributed critical space is only part of the monitoring challenge. Liebert® Nform™ leverages the network connectivity capabilities of Liebert® PCW to provide centralized monitoring of the distributed equipment. Utilizing the SNMP and Web technologies integrated in each Liebert® IntelliSlot communication card, Liebert® Nform™ centrally manages alarm notifications and provides an intuitive interface to access critical status information. Liebert® Nform™ allows critical system information to be readily available to support personnel wherever they are, increasing responsiveness to alarm-event conditions, thus allowing IT organizations to maximize their system availability.

Liebert SiteScan® Web Control, Data Capture, Energy Management and Planning

For customers who require extensive management of critical system equipment spanning multiple locations in an ever-moving global enterprise, Liebert SiteScan® Web will centrally manage critical equipment and give the power to move beyond the event responsive service paradigm.

Liebert SiteScan® Web does it all

- Real-Time Monitoring and Control
- Event Management and Reporting
- Data Analysis and Trending
- Building Management Integration

Liebert SiteScan® Web is a comprehensive critical system management solution dedicated to ensuring reliability through graphics, event management and data export. The standard Web interface allows users easy access from anywhere, anytime.



Liebert® PCW: Simplifies Installation for Real Operational Efficiency

■ Adjustable Legs

The legs of the Liebert® PCW can be easily adjusted to suit the installation positioning requirements, enabling modification in relation to the height of the on-site raised floor level. Any future maintenance action will be timely and simple.

■ User Friendly Electrical Connections Kit

Liebert® PCW Extended solution offers power cables with fast coupling to allow easy connection between the fan and coil modules, reducing installation time.

■ Water Connections on Demand

Liebert® PCW presents three options for water connection: from the bottom, from the top and from the left of the unit, for flexible on-site configuration.

■ Floor Tile Support & Maintenance Kit

Liebert® PCW has specific kits to sustain floor tiles in proximity to the unit.



Furthermore, to simplify access to the fans during installation and replacement, the Liebert® PCW maintenance kit facilitates servicing, reducing repair time and possible downtime. The kit has also been specifically designed and tested to provide support for the fans during replacement.



Easy Handling And Easy Alignment

Fast Electrical Connection Kit

On-Demand Water Connection

Adjustable Legs

Liebert®PCW: simplifies installation for real operational efficiency.

Liebert® PCW: Chilled Water Systems



Smart

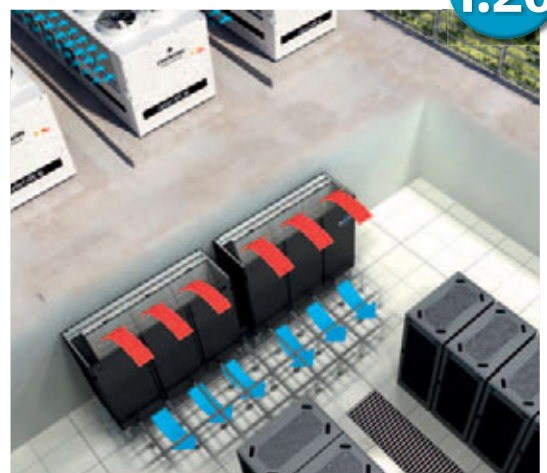
Equipment description	Freecooling Chiller, room cooling units and aisle containment.
Room Set Point	22°C 50% in front of the servers
Water/Glycol	18°C - 24°C
Where it is most commonly applied	A) All climates B) Data center cooling separated from air conditioning
Application constraints	- Mandatory hot and cold aisle configuration - Chillers must be dedicated due to high working temperatures
Benefits of Emerson Network Power Solutions	- Smart Aisle™: Top efficiency as a result of dedicated solutions to take advantage of higher working temperatures (maximized Freecooling) - Increased system efficiency as a result of Supersaver Evolution functioning mode (intelligent communication between Liebert® HPC and Liebert® PCW)
Existing Data Center	Simple retrofit in the case of hot and cold aisle separation



ECO Water



Equipment description	Chiller with Freecooling and room cooling units
Room Set Point	24°C 50%
Water/Glycol	10°C - 15°C
Where it is most commonly applied	A) Data center cooling separated from air conditioning B) Cold and medium climates to take advantage of Freecooling benefits
Application constraints	- Mandatory use of glycol solutions to avoid chiller freezing
Benefits of Emerson Network Power Solutions	Liebert® PCW provides the highest net sensible capacity for all working conditions. Increased system efficiency as a result of the Supersaver Evolution functioning mode (intelligent communication between Liebert® HPC and Liebert® PCW)
Existing Data Center	Simple retrofit



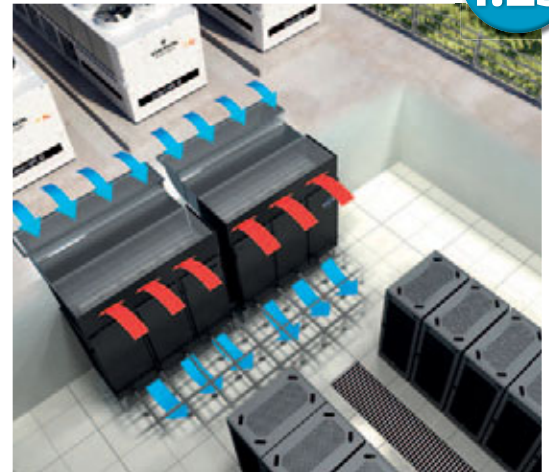
The Liebert® PCW is the ideal precision cooling unit for data centers facing the challenges of cloud computing. The system adapts perfectly to the dynamics of the data center environment, in response to heat load changes typically seen in a cloud computing application.



ECO Air



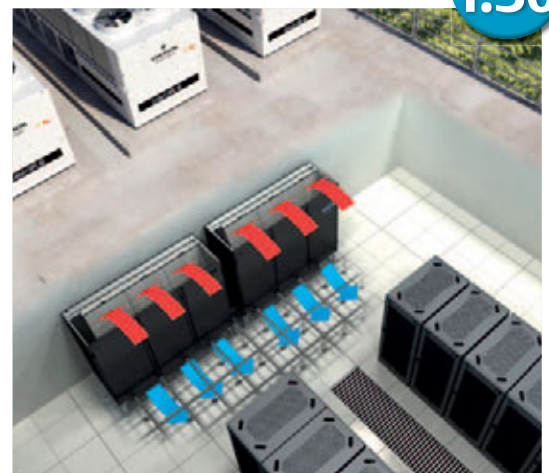
Equipment description	Chiller with Freecooling, room cooling units and air channels
Room Set Point	24°C 50% (once the direct Freecooling is in operation, supply set point 22°C 50%)
Water/Glycol	10°C - 15°C
Where it is most commonly applied	A) Cold and medium climates to exploit Freecooling benefits
Application constraints	<ul style="list-style-type: none"> - No indication when the cold and warm seasons are too humid or too dry, thus reducing possibility of increased use of direct Freecooling - Being in contact with both external and internal conditions, external events (Fire, Smoke, Pollution) can compromise internal operation of data center
Benefits of Emerson Network Power Solutions	Economizer function allows perfect control of temperature and humidity, optimizing the energy benefit of this type of system
Existing Data Center	Extremely complex retrofit due to air channels



Legacy



Equipment description	Chiller without Freecooling and room cooling units
Room Set Point	22°C 50%
Water/Glycol	7°C - 12°C
Where it is most commonly applied	<p>A) Same chilled water system is used both for cooling the data center as well as for comfort cooling</p> <p>B) Hot climate where the external temperatures rarely goes below 5°C</p>
Application constraints	<ul style="list-style-type: none"> - Reduced efficiency due to low water temperatures (no Freecooling) - Reduced efficiency due to unnecessary dehumidification (SHR<1)
Benefits of Emerson Network Power Solutions	Liebert® PCW provides the highest net sensible capacity for all working conditions.
Existing Data Center	Simple retrofit



Liebert® PCW Configurations

Extended Down Unit

25 kW-220 kW

Liebert® PCW Extended Down with fan modules installed in the raised floor, delivers optimum energy efficiency (70% saving compared to standard market solution with EC Fan). The system is shipped in two parts, fans module and coil module. This enables a shorter lead time on the fans module and optimizes installation time. Adjustable legs are provided in order to tailor the installation to different raised floor heights.



Extended UP Unit (Downflow or Upflow)

25 kW-220 kW

Liebert® PCW Extended Up delivers up to 50% in energy savings compared to a traditional chilled water unit, even if fans are installed above the raised floor. Moreover, in the event of a demand for increasing density, Liebert® PCW responds with a higher capacity (up to 20% more) in the same time frame, without requiring the purchase of an additional unit.



Downflow Unit

25 kW-220 kW

This is the most common configuration on the market, with a unique level of energy efficiency when compared to the standard market solutions with EC Fan. Liebert® PCW Downflow is 2 m high, with coil and fan sections and it achieves energy savings of up to 40%.





Upflow Unit

25 kW-150 kW

Upflow units are the ideal solution for applications with air distribution from the top of the unit, even with no ducting system. The presence of a Liebert® EC Fan 2.0 means that Liebert® PCW can deliver the highest External Static Pressure (ESP) whilst limiting power input.



Extended UP Unit (frontal air delivery)

25 kW-220 kW

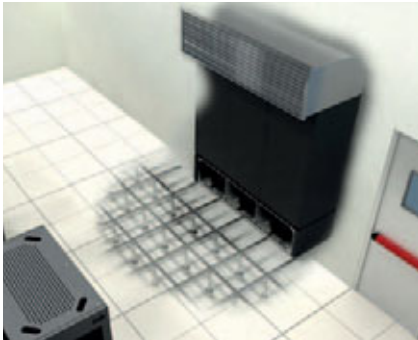
In the event that the UPS room or the technical room are the only available locations for installing the floor-mount unit, the frontal discharge configuration is the most suitable, taking the air at a higher temperature from the top of the unit, and delivering cooled air through the front.



Extended Up Unit (back air delivery)

25 kW-220 kW

When the site design excludes the presence of water connections inside the data center, the Liebert® PCW with back air discharge is the ideal solution for managing these conditions, as the cooling unit is located outside the room, delivering the cold air through the rear of the fan module using the raised floor.



Liebert® PCW: Top Performer

Standard Height - LEGACY

Unit	PH025	PH030	PH035	PH040	PH045	PH060	PH070	PH080	PH095	PH100	PH110	PH145
Total Gross Capacity [kW]	30.1	40.0	44.8	56.0	60.1	80.1	95.0	115.1	105.8	130.1	160.2	189.3
Net Sensible Capacity [kW]	25.7	32.7	42.2	44.3	48.7	68.7	81.0	93.7	100.2	111.6	122.8	145.6
Power Input [kW]	0.79	1.56	2.63	1.65	1.33	2.43	2.95	4.41	3.60	4.41	5.22	6.69
Net Sens EER	32.5	21.0	16.0	26.8	36.6	28.3	27.5	21.3	27.8	25.3	23.5	21.8
Airflow [m³/h]	6450	8150	13400	10500	11550	17450	20550	23200	27600	28600	28400	34000
Water temperatures Air to the unit	7°C – 12°C 24°C 50% RH											

Standard Height - ECO

Unit	PH025	PH030	PH035	PH040	PH045	PH060	PH070	PH080	PH095	PH100	PH110	PH145
Total Gross Capacity [kW]	20.1	24.7	25.9	32.6	37.9	49.7	58.3	68.8	71.7	83.3	97.3	128.7
Net Sensible Capacity [kW]	19.4	23.7	25.1	31.6	36.9	48.2	56.5	66.3	69.0	80.3	91.5	121.4
Power Input [kW]	0.65	0.98	0.85	0.96	1.01	1.53	1.77	2.49	2.73	3.00	3.48	6.30
Net Sens EER	29.8	24.2	29.5	32.9	36.5	31.5	31.9	26.6	25.3	26.8	26.3	19.3
Airflow [m³/h]	6000	6900	8700	8700	10500	14700	17100	19000	24850	25000	25000	34000
Water temperatures Air to the unit	10°C – 15°C 24°C 50% RH											

Standard Height - SMART

Unit	PH025	PH030	PH035	PH040	PH045	PH060	PH070	PH080	PH095	PH100	PH110	PH145
Total Gross Capacity [kW]	20.9	25.6	26.9	33.9	39.3	51.5	60.4	71.4	74.3	86.3	100.7	133.3
Net Sensible Capacity [kW]	20.3	24.6	26.1	32.9	38.3	50.0	58.6	68.9	71.6	83.3	97.2	127.0
Power Input [kW]	0.65	0.98	0.85	0.96	1.01	1.53	1.77	2.49	2.73	3.00	3.48	6.30
Net Sens EER	31.2	25.1	30.7	34.3	37.9	32.7	33.1	27.7	26.2	27.8	27.9	20.2
Airflow [m³/h]	6000	6900	8700	8700	10500	14700	17100	19000	24850	25000	25000	34000
Water temperatures Air to the unit	20°C – 26°C 35°C 30% RH											

Unit Dimensions

Unit	PH025	PH030	PH035	PH040	PH045	PH060	PH070	PH080	PH095	PH100	PH110	PH145
Width [mm]	850	850	1200	1200	1750	1750	2050	2050	2550	2550	2550	2950
Depth [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

Liebert® PCW Extended: Top Performer

Extended Height - LEGACY

Version	Extended DOWN							Extended UP						
Unit	PH046	PH066	PH081	PH091	PH111	PH136	PH161	PH046	PH066	PH081	PH091	PH111	PH136	PH161
Total Gross Capacity [kW]	51.2	80.1	95.1	179.0	124.6	173.2	214.7	51.2	80.1	95.1	119.0	124.6	173.2	214.7
Net Sensible Capacity [kW]	44.9	70.0	82.9	89.8	109.9	134.8	159.6	44.6	69.5	82.4	89.3	108.9	133.5	158.3
Power Input [kW]	1.32	1.53	2.07	1.93	2.58	3.84	4.74	1.55	2.01	2.63	2.39	3.51	5.10	6.03
Net Sens EER	34.0	45.8	40.0	46.5	42.6	35.1	33.7	28.8	34.6	31.3	37.4	31.0	26.2	26.3
Airflow [m³/h]	11500	17650	21000	19500	28000	30800	34500	11500	17650	21000	19500	28000	30800	34500
Water temperatures Air to the unit	7°C – 12°C 24°C 50% RH													

Extended Height - ECO

Version	Extended DOWN							Extended UP						
Unit	PH046	PH066	PH081	PH091	PH111	PH136	PH161	PH046	PH066	PH081	PH091	PH111	PH136	PH161
Total Gross Capacity [kW]	35.8	51.9	63.7	76.9	87.2	116.2	138.4	35.8	51.9	63.7	76.9	87.2	116.2	138.4
Net Sensible Capacity [kW]	34.5	50.7	61.9	72.6	84.6	111.8	128.2	34.3	50.3	61.4	72.2	83.7	110.6	129.9
Power Input [kW]	1.31	1.19	1.79	1.85	2.55	3.69	4.50	1.54	1.55	2.29	2.31	3.48	4.92	5.79
Net Sens EER	26.3	42.6	34.6	39.2	33.2	30.3	28.5	22.3	32.5	26.8	31.3	24.1	22.5	22.4
Airflow [m³/h]	11500	16100	20000	19500	28000	30800	34500	11500	16100	20000	19500	28000	30800	34500
Water temperatures Air to the unit	10°C – 15°C 24°C 50% RH													

Extended Height - SMART

Version	Extended DOWN							Extended UP						
Unit	PH046	PH066	PH081	PH091	PH111	PH136	PH161	PH046	PH066	PH081	PH091	PH111	PH136	PH161
Total Gross Capacity [kW]	37.1	53.7	66.0	79.6	90.4	120.3	143.3	37.1	53.7	66.0	79.6	90.3	120.3	143.3
Net Sensible Capacity [kW]	35.8	52.5	64.2	77.8	87.8	116.6	138.8	35.6	52.1	63.7	77.3	86.8	115.4	137.5
Power Input [kW]	1.31	1.19	1.79	1.85	2.55	3.69	4.47	1.54	1.55	2.29	2.31	3.48	4.92	5.76
Net Sens EER	27.3	44.1	35.9	42.0	34.4	31.6	31.1	23.1	33.6	27.8	33.5	24.9	23.5	23.9
Airflow [m³/h]	11500	16100	20000	19500	28000	30800	34500	11500	16100	20000	19500	28000	30800	34500
Water temperatures Air to the unit	20°C – 26°C 35°C 30% RH													

Unit Dimensions

Version	Extended DOWN							Extended UP						
Unit	PH046	PH066	PH081	PH091	PH111	PH136	PH161	PH046	PH066	PH081	PH091	PH111	PH136	PH161
Width [mm]	1200	1750	2050	2050	2550	2550	2950	1200	1750	2050	2050	2550	2550	2950
Depth [mm]	890	890	890	890	890	890	890	890	890	890	890	890	890	890
Height [mm]	1970 + 600	1970 + 600	1970 + 600	1970 + 600	1970 + 600	1970 + 600	2570	2570	2570	2570	2570	2570	2570	2570

Emerson Network Power

Data Center Infrastructure for Large and Small Applications



■ Liebert® HPC

Wide range of high efficiency Freecooling Chillers from 40 kW to 1600 kW

- Designed specifically for data center applications and to work with SmartAisle™
- Premium energy efficiency version
- iCOM® control featured



■ Liebert® HPM - Liebert® PCW

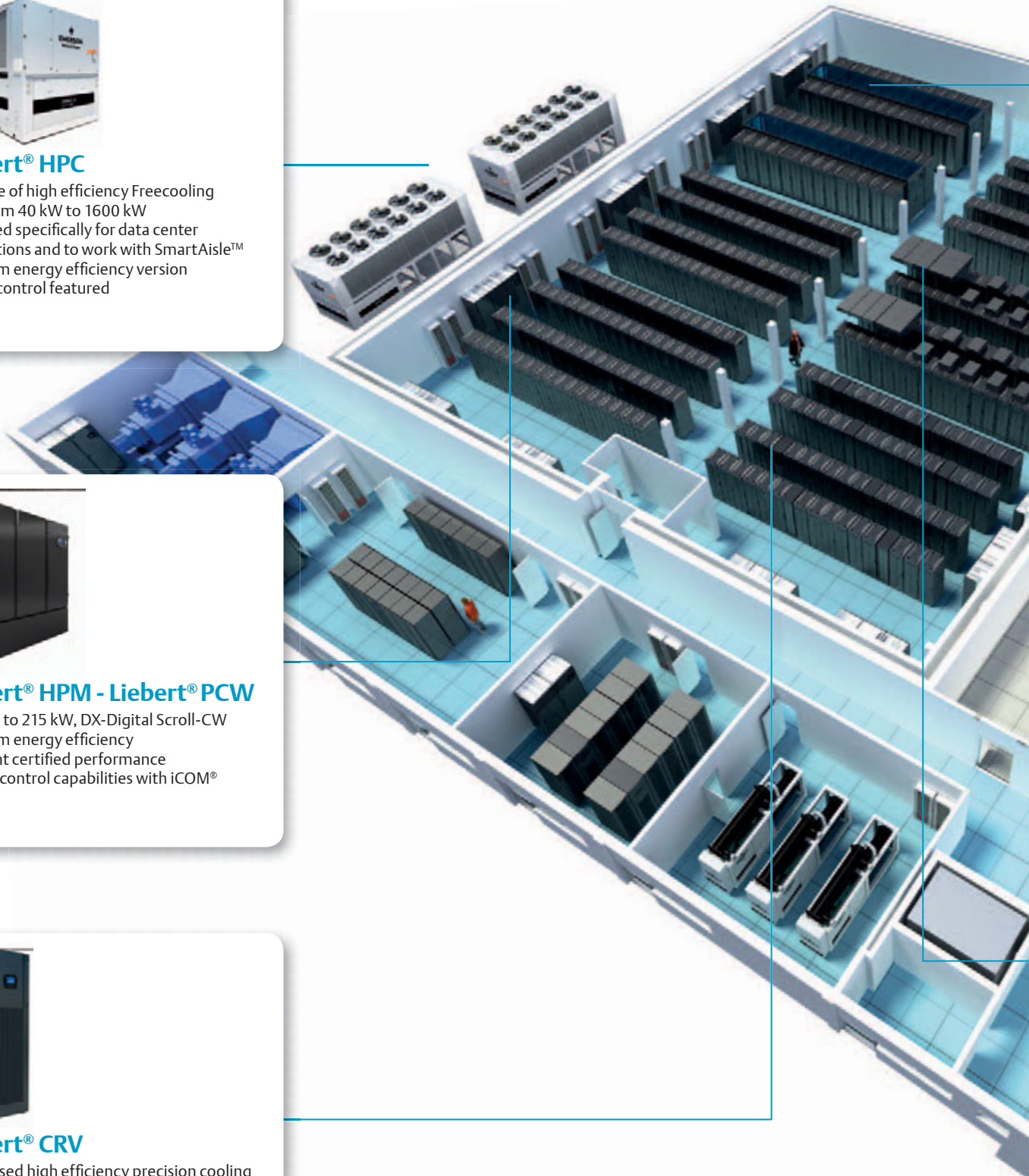
From 4 kW to 215 kW, DX-Digital Scroll-CW

- Premium energy efficiency
- Eurovent certified performance
- Unique control capabilities with iCOM®



■ Liebert® CRV

- Row-based high efficiency precision cooling units available in DX or CW versions
- Decoupled control for airflow and cooling capacity
- Modulating cooling capacity with digital scroll
- iCOM® control with remote rack sensors





SmartAisle™

- Aisle containment
- Provides highest energy efficiency
- Works with any Liebert® cooling unit



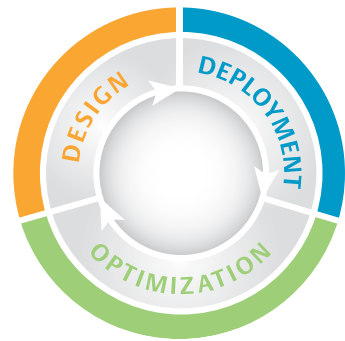
Liebert® XD

- Refrigerant based high density cooling installed close to the server
- Hot spot management for up to 30 kW per rack
- On-demand upgrade with plug and play
- High efficiency and 100% sensible cooling

Infrastructure Services and Support

Emerson Network Power supports its Centers of Expertise with the largest global services organization in the industry, delivering:

- Design, installation and startup
- Warranty service
- Preventive maintenance
- 24/7 remote monitoring
- Emergency service
- Site audits



Design

Upfront planning is critical to the success of any facility. So is flexibility. That's why we offer an array of design services to help get your installation up and running and to assure it operates efficiently and effectively throughout its lifetime.

Deployment

We can build in the necessary flexibility today to assure you have the scalability you need to grow tomorrow.

Optimization

Optimization is making the most of your infrastructure. Emerson Network Power can provide optimized support for your day-to-day demands and your longer-term plans, particularly for energy savings.



LIFE®.net

- Maximized system availability - real-time diagnosis and resolution of all possible operating anomalies
- Minimized downtime - expert engineer available 24/7
- Reduced operating costs - through preventative maintenance

Ensuring The High Availability Of Mission-Critical Data And Applications.

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Emerson Network Power, a business of Emerson (NYSE:EMR), delivers software, hardware and services that maximize availability, capacity and efficiency for data centers, healthcare and industrial facilities. A trusted industry leader in smart infrastructure technologies, Emerson Network Power provides innovative data center infrastructure management solutions that bridge the gap between IT and facility management and deliver efficiency and uncompromised availability regardless of capacity demands. Our solutions are supported globally by local Emerson Network Power service technicians.

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The global leader in enabling Business-Critical Continuity™

- AC Power
- Connectivity
- DC Power
- Embedded Computing
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- Infrastructure Management & Monitoring
- Outside Plant
- Power Switching & Controls
- Precision Cooling
- Racks & Integrated Cabinets
- Services
- Surge Protection

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