

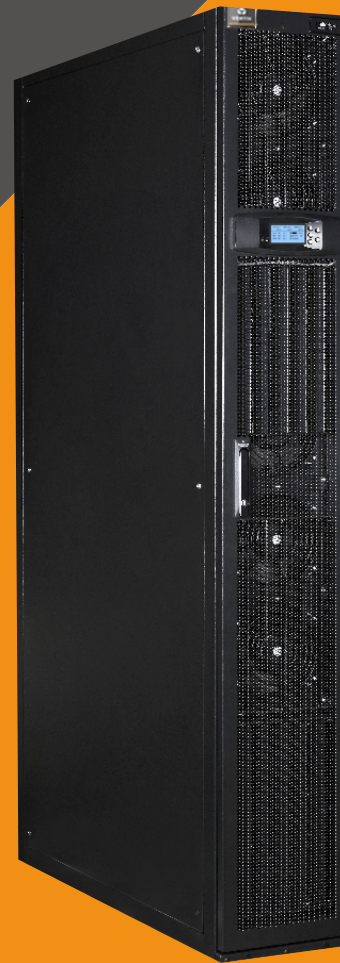


VERTIV™

Liebert®

XDP™ & XDH™

Flexible, Proficient Cooling for High
Heat Density Applications



High Time for High Density



Emerging Data Center challenges

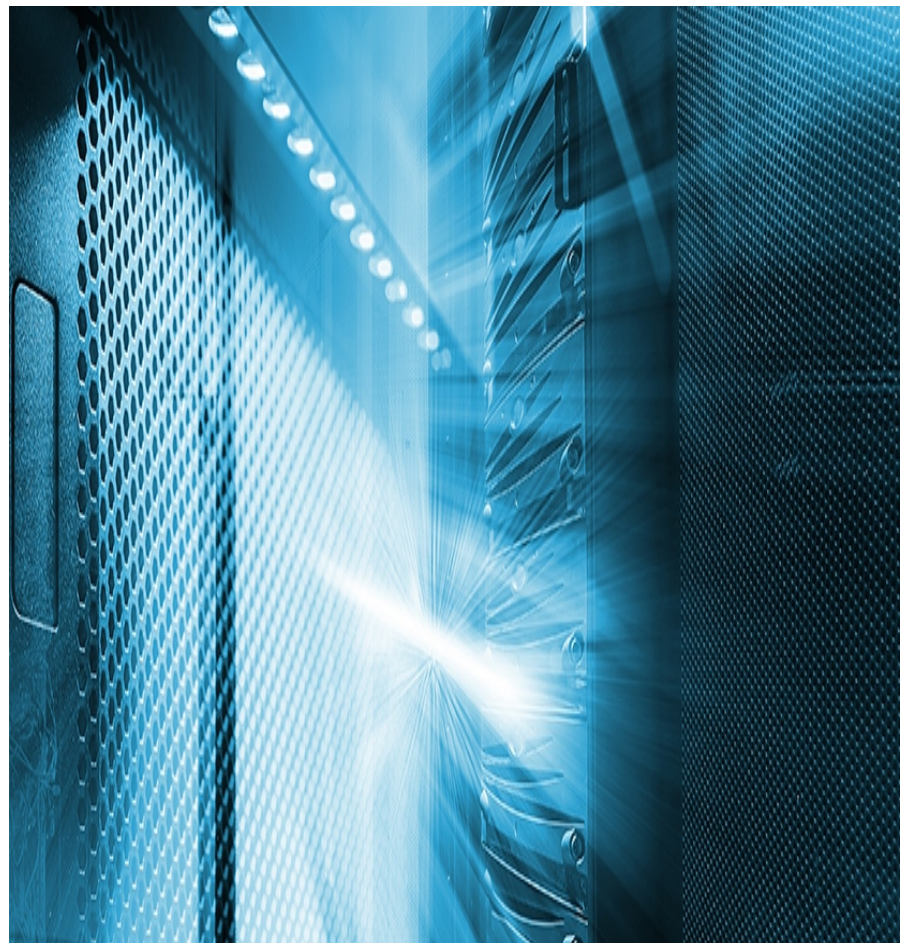
- Hyperscale facilities are seeing spikes in their rack power densities, owing to the widespread adoption of hyper-converged computing systems.
- While densities under 10kW per rack remain the norm, deployments at 15kW are becoming common, while some are inching towards 25kW.
- In fact, at Vertiv, we're experiencing strong demand in some distinct segments to accommodate cooling needs for OCP racks of around 20kW

Enabling High Density Applications:

Growing adoption of hyper-converged computing systems and higher rack revenue potential for colocation providers are just a couple of reasons high-density racks are growing in popularity.

But while a mainstream move towards higher rack densities may take some time, it can fundamentally change a data center's form factor, including its power infrastructure and cooling environment.

When shifting to higher rack densities, every operational aspect has to be assessed to ensure seamless operational continuity, as well as efficiency, scalability, and space demands



When Conventional Cooling Is Not Enough

New data center technologies require a different strategy when it comes to cooling. Blade servers, communication switches and other electronic equipment are being packed into tighter and smaller spaces. The cornerstone of an effective cooling strategy is that you cannot rely on conventional, mission-critical cooling systems to resolve these high heat density environments.

Business continuity professionals rely on an integrated solution — one that solves both room-level and rack-level cooling challenges .

Tight space + High computing = High heat densities

Smaller, tighter spaces within the data center lead to higher, concentrated heat densities. Within a few years, a kW of rack space is being populated to over 10kW load. This calls for a paradigm shift from a room-based view to a rack-based view.

Professionals today comprehend "kW per rack" to evaluate high density cooling solutions.

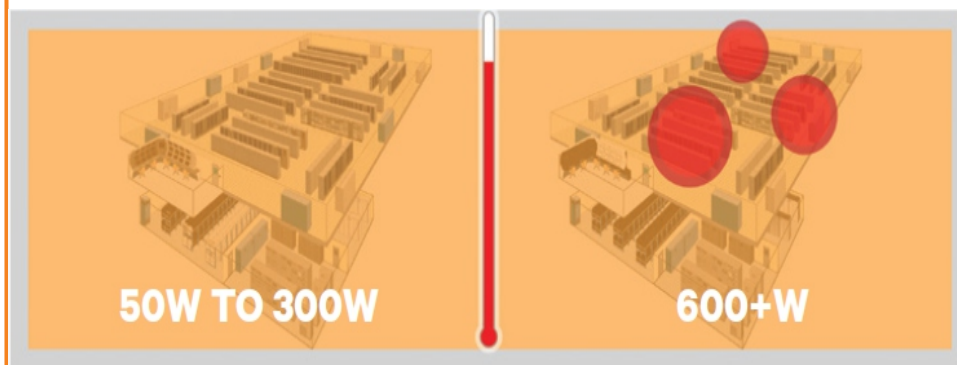
Nullifying hot spots or zones require targeted cooling solutions. But, for extremely high heat density scenarios, conventional approaches simply consume too much floor space. A different approach is needed.

Space V/s Computing Power

As processor capabilities increase, so do computer room power densities— from 50 Watt per square foot (540W/m²) to over 300 Watt per square foot (3220W/m²). Your whole data center just keeps getting hotter.

Mismatched cooling systems

Compounding the problem, this higher heat load is unevenly distributed throughout the room. Sometimes, power densities can grow into hundreds of Watt per square foot, creating localized "hot spots" of extreme heat.



Introducing a Flexible Cooling Approach for High Rack Density

Unlike any other solution provider, only Vertiv offers open and closed architectures with a wide range of equipment configurations to meet the cooling needs of every data center facility

The Liebert® XD™ Solution Starts With An Innovative Pumped Refrigerant Application

This unique application requires an off-the-shelf product which makes Liebert® XD™ solution much more effective. As a proven fact, pumping refrigerant as a liquid and allowing it to evaporate as it absorbs heat is over seven times as efficient than energy consumed by similar water-based approaches. This pumped refrigerant operates at a low pressure and evaporates at room temperature, making it most suitable to cool the electronic equipment

Row-based Cooling That's Right In Line With Your Needs

The Liebert® XDH™, a modular row cooler, is placed directly in line with the rack enclosures. This adaptive design accommodates future provisioning and is available with a Smart Module integrated control board for increased individual module control and monitoring.

Targeted cooling using Liebert® X-treme Density mission-critical cooling systems are specifically designed to address high heat loads generated by tightly packed electronic rack enclosures.



Liebert XDP



Liebert XDH

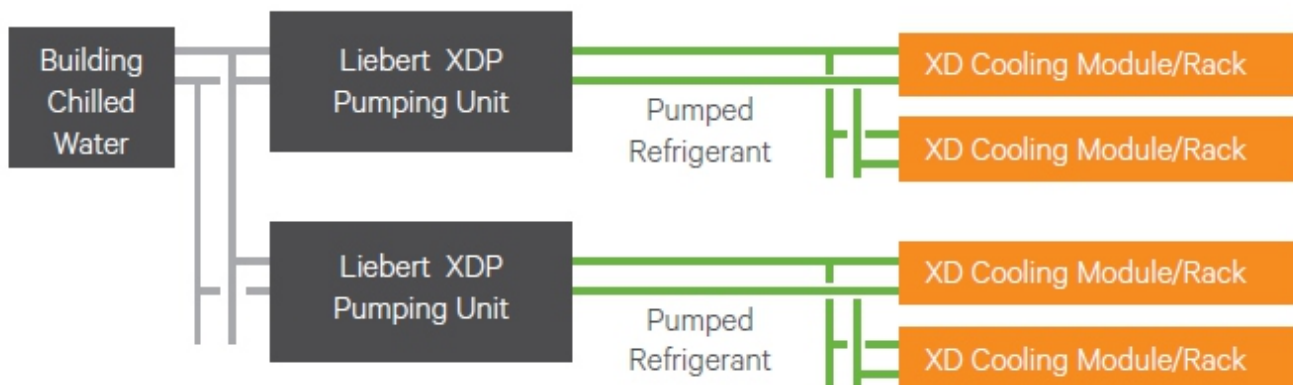
LIEBERT® XD™: THE FLEXIBLE SOLUTION

Effective Solutions Need to be Flexible

The Liebert® XD™ solution for high heat density cooling applications can be implemented as a hybrid approach. This can be done using a combination of floor-mounted, mission-critical cooling units and cooling from the Liebert® XD™ Series as supplemental or primary cooling units.

As heat loads increase, the Liebert® XD™ solution enables the addition and reconfiguration of the cooling units thereby effectively responding to the environmental changes.

Indirect system configuration



LIEBERT® XDP™: Benefits

- Large cooling capacity (200kW per module) with a High COP (35)
- Low pressure pumped refrigerant is ideal for electronic equipment as well as eco-friendly.
- Variable pumping system with redundant & automatic change over option.
- Two port valve with DPT (Dew point temperature) control & dehumidification control helps in energy efficient solution.
- Can support 100% SH ratio & dehumidification



LIEBERT® XDH™: Benefits

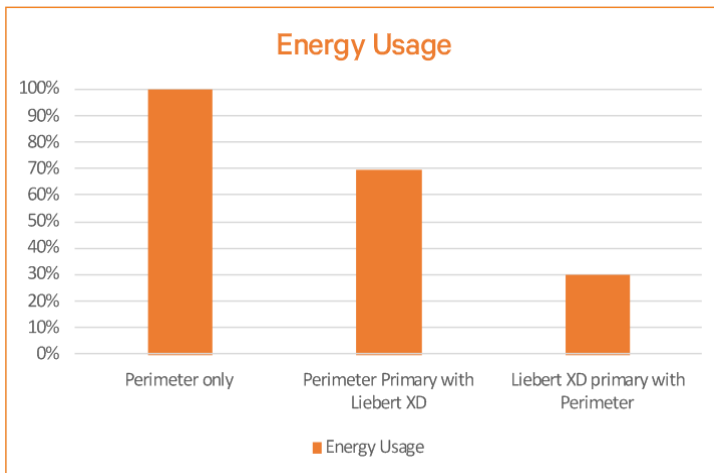
- Scalable upto 32kW per rack density
- Variable speed fan reduces power during off-peak cooling stages
- "V" type microchannel coil provides larger heat transfer, high efficiency & lower resistance
- EEV provides constant superheat & uniform distribution of coolant volume
- Hot-swappable fans. option for piping connections from top and bottom

Liebert® XD™ provides huge energy savings

The Liebert XD supports your energy efficiency initiatives, particularly for high density applications

Liebert® XD™ solution utilizes 15%-50% less chiller plant capacity, diesel generator and switch gear capacity providing a potential energy saving of 40-50% v/s conventional solutions with core-benefits of:

- Positioning cooling units closer to the heat source shortens the cool air path thereby reducing the mixing of hot and cold air.
- Micro channel coils provide minimal air pressure drop losses and much better thermal heat transfer.
- No over-cooling required to eliminate hot spots.
- Flexibility and adaptability to accommodate future expansion of data centers.



The traditional deployment of the Liebert® XD™ system is as a supplemental cooling solution, which can save ~30% of the energy to cool the data center. By using the Liebert XD system as the primary cooling, the datacenter can save approximately 70% in energy.

Liebert® XD™ : Solution Highlights

Lowest total cost of ownership

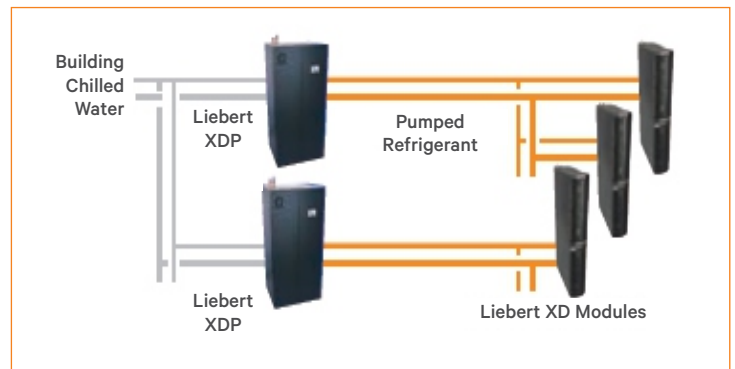
- Total energy saving potential up to 70%
- Minimal floor space requirements
- Efficiently handling part-load demands

Flexibility

- Handles high density heat up to 30kW/rack
- Plug & play installation
- Automatic switch over & redundant option - XDP
- Efficiently draws hot air out of equipment racks and moves cool air into the cold aisle
- Variable & hot-swappable EC fans

Availability

- Uses pumped refrigerant as a cooling fluid for safe operation around the electronic equipment
- Complete packaged systems ensure fast and reliable installation
- The unique working conduct of coolant conversion makes it an ideal solution for facilities where data center managers are reluctant to re-introduce water owing to leakage snags.



Liebert® XDH™

Parameters	XDH 30	
Dimensions (W×D×H) (mm)	300 × 1100 × 1945	
Net Weight (kg)	165	
Controller	PACC	
Total Capacity (kW)*	32	27
Refrigerant	R410A/R134A	
COP	36	31
Air flow (m³/hr)	6300	
EC Fan (Watt)	870	
Type & no. of Fan	Variable - EC Axial fan, hot swapable & 8 nos	
Power Input	220V+/-10%, 1Ph, 50Hz/60Hz	
Air Filter	G2	
Noise Level**	80	

Liebert® XDP™

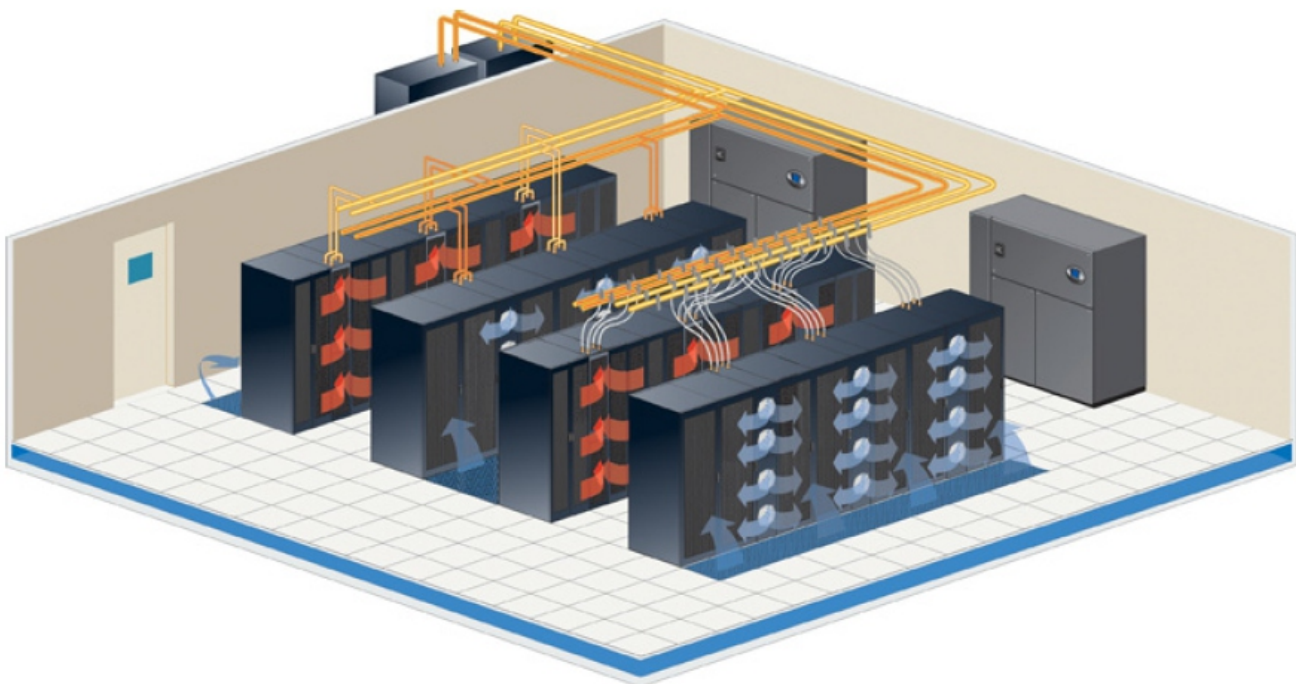
Parameters	XDP 200	
Dimensions (W×D×H) (mm)	600 × 1100 × 1945	
Net Weight (kg)	420	
Controller	PACC	
Total Capacity (kW)	200	160
Refrigerant	R410A/R134A	
Water inlet/outlet temp (°C)	7/12	10/15
Water volume (m³/hr)	35.3	29.2
Pump Power (Watt)	1600	1400
Type of Pump	Gear Pump, Variable Speed	
Power Input	380~415V, 3Ph, 50Hz/60Hz	

Note:

* XDH cooling capacity : 32 kW - 37°C DB, 19.9 °C WB and 27 kW - 35 °C DB, 20.6 °C WB

** Sound Pressure level at 2m distance

*** In Evaporator microchannel coil is used for better performance
- Specification are subject to change without any prior intimation





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