

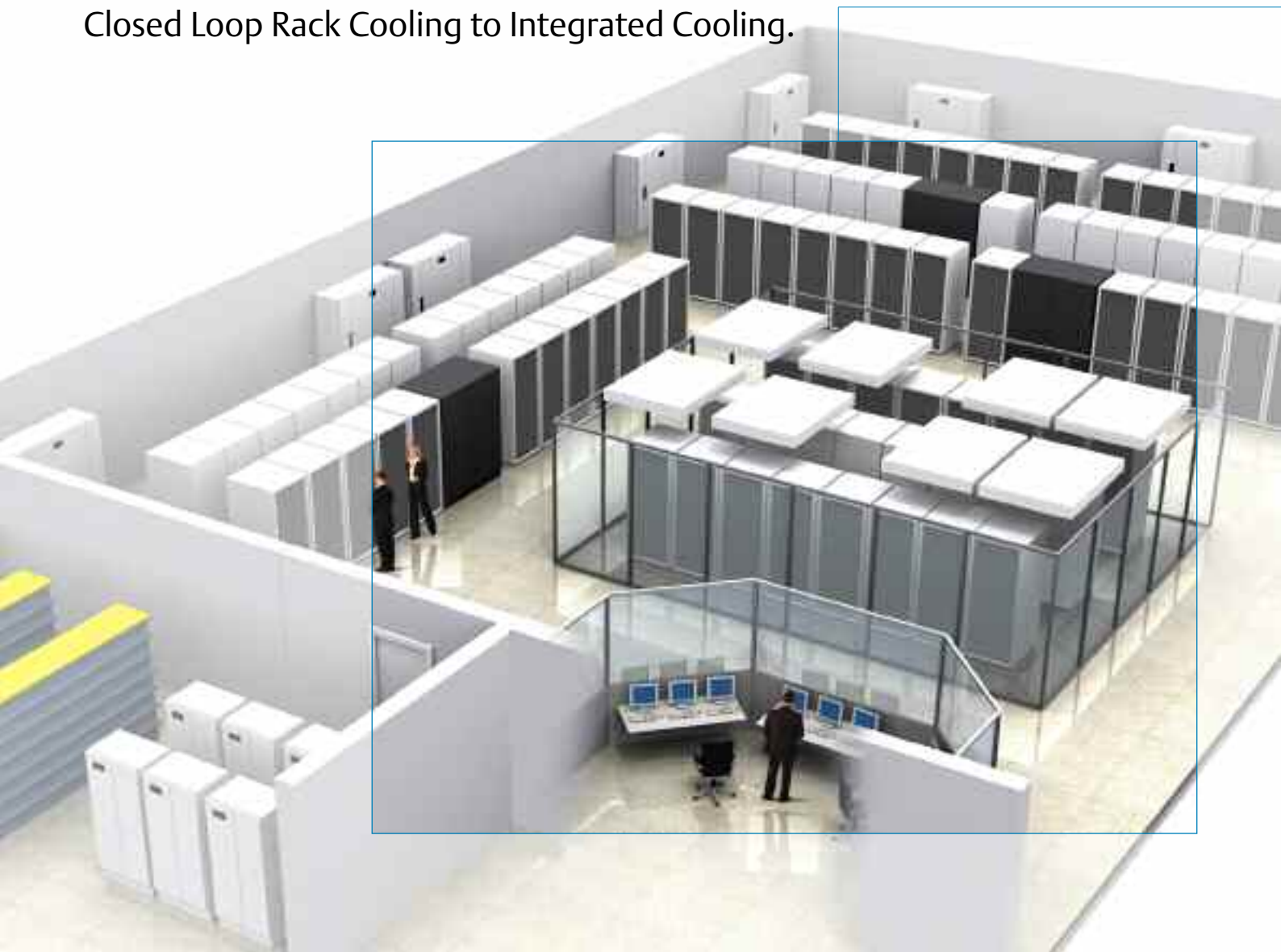
*Liebert XDFN*  
*Closed Loop Cooling for High Density Racks*



# Emerson Network Power Business-Critical Continuity Expert

## Liebert X-treme Solutions Adaptive Cooling and Power Architecture

Whether you have to manage a 10 sqm Server Room or 1000 sqm Datacentre, Emerson Network Power has the solution for your needs, from Closed Loop Rack Cooling to Integrated Cooling.





*It was 24 kW per Room.  
It is 24 kW per Rack.*



*Cool the Server  
not the Room*



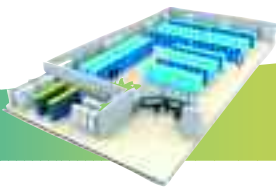
Liebert XDFN: Air Flow Distribution



**Liebert XDFN Closed Loop Cooling for High Density Racks**

*Taking Heat Removal to the X-treme  
Without Water Inside the Datacentre!*

# Growing Infrastructures, Growing Needs

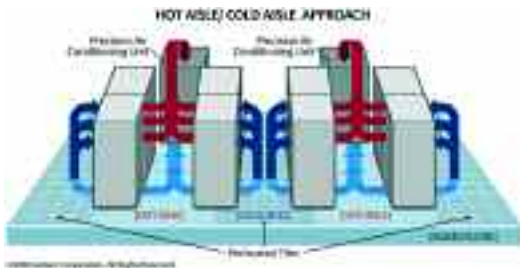


**Up to 5 kW/rack**

**Room Cooling approach.**



Heat density limitations.  
High total cost of ownership.



The use of raised floor for air distribution is a common practice for heat density up to 5 kW/rack.

**Conventional**



**Up to 16 kW/rack**

**Floor Mount Units + supplemental cooling, based on open architecture.**

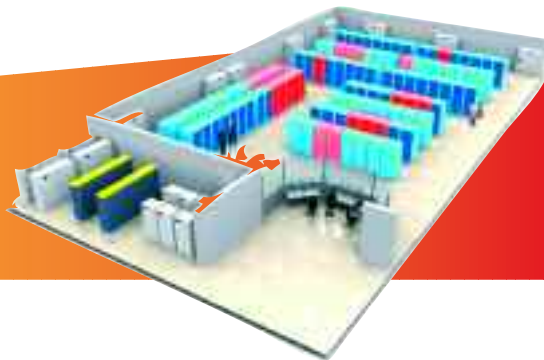


Resolve hot spots, zones, rooms issues. Applicable to both new and existing data centres.



Liebert XD, supplemental cooling series, works with and without raised floor with racks arranged in hot/cold aisles and adds heating dissipation only where and when it is required.

**Adaptive**



*Liebert X-treme Solutions are the answer to this need.*

## Up to 24 kW/rack

**Closed Loop Rack Cooling.**



Ideal for High Heat Density.  
Complete and integrated solution.  
Low cost of installation.



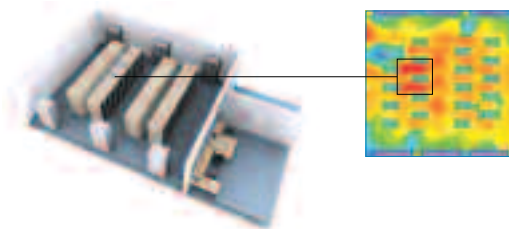
Liebert XDFN cools the Servers not the room and guarantees a safe protection for customers' servers offering a complete solution for redundancy, power protection, fire extinguishing, back-up ventilation and SNMP monitoring.

## Hot Spot Management

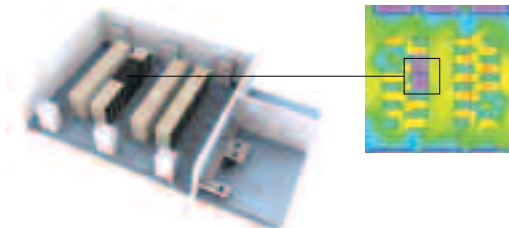
New Technology Servers increase dramatically increase computing capacity which also means an increase of heat dissipation needs.

A rack equipped with Blade Servers can easily exceed 20 kW thus creating hot spots not manageable with standard air conditioning solutions (refer to picture A where red hot spots are shown).

Emerson Network Power, thanks to its expertise in Precision Cooling and AC Power Systems, has designed an indoor enclosure system for high density servers with built in power back up (refer to picture B where the hot spots have been treated and cooled).



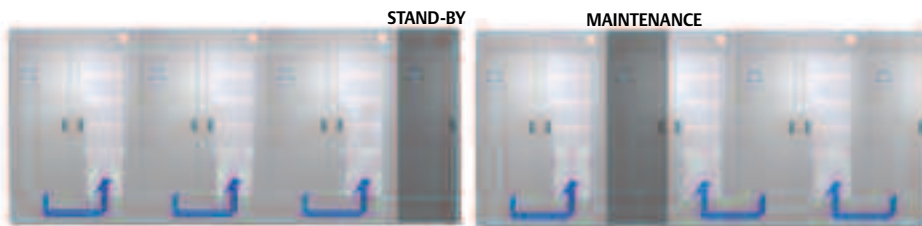
A. Hot spot due to insufficient Cooling



B. XDFN can restore the correct Temperature

**Adaptive**

# Adaptive Cooling and Power Architecture



## N+1 Redundancy & Modularity

The modular design allows redundancy, rapid replacement of faulty units and **scalability**.

### N+1 Redundancy configuration.

For each block of XDFN units (cooling module+racks) there will be **one redundant cooling module connected in LAN** with the other cooling modules, ready to be activated in case of failure or maintenance of one of the running units.

## Back up Ventilation

Liebert XDFN is also equipped with a back-up ventilation system which ensures the circulation, inside the rack, of the air coming from the data centre room in case of cooling module or mains power failure.

### • Cost saving

The UPS will be required to give power only to the small back-up fans, and not to the rest of the air-conditioner system.

### • Safety

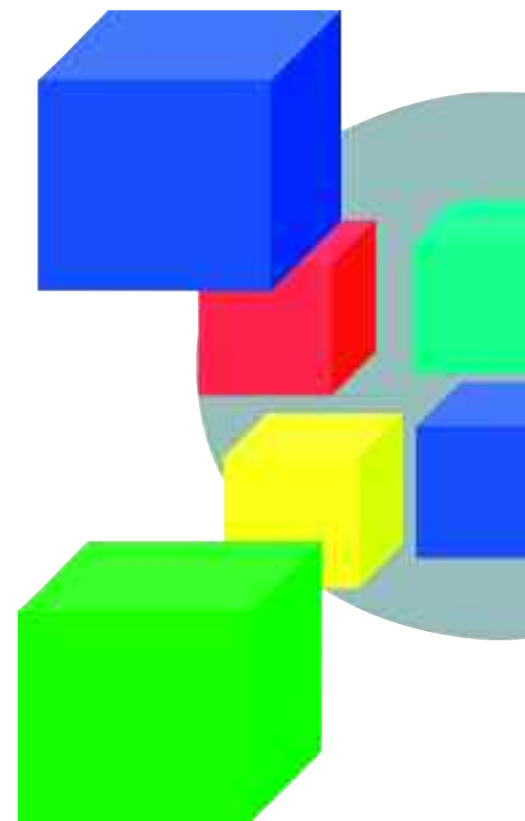
Back up ventilation protects your business for enough time to allow the generator to start and restore the power supply, or for other causes of failure to be corrected.

When power is restored, the back-up ventilation will be automatically switched off and the cooling module will run as in standard conditions.



## Adaptability

Liebert XDFN is part of the Liebert Adaptive Cooling Architecture which can provide a roadmap to deal with increasing heat density, and with maximum flexibility and scalability and the lowest cost of ownership.



### Stand Alone

- Singular unit reliable & simple



### Modular

- Standard units with fixed sizes that work together
- Cost savings by retaining initial investment
- Added redundancy



- Optimal building blocks that work together
- Ultimate reliability, flexibility and lowest Total Cost of Ownership
- Fewest points of failure
- Reconfigurable to adapt to new technologies with the Capability to move to higher Tiers



**Scalable**

- Flexibility with internal modularity
- A unit with single direction for growth



**Integration**

Liebert XDFN is an integrated equipment cabinet with built in cooling, power distribution, rack for server location, monitoring and fire extinguishing system offering full redundancy and back-up ventilation.

**Monitoring and Control**

Liebert XDFN features an innovative 32 bit Microprocessor control offering the capability of integration in an SNMP monitoring system, or simple browsing of the unit through the web.

**Electrostatic discharge prevention**

Humidity is a key issue for Servers because both high and low humidity may damage the electronics. The cooling module is equipped with Humidity control in order to always keep the adequate humidity level within the rack.

**Fire Extinguishing**

Taking care of your business means providing protection for all possible situations. Therefore Liebert XDFN features a Fire Extinguishing System based on Vesda laser focus technology.

Special sensors continuously monitor the air inside both the rack and inside the Cooling Module. If smoke is detected an inert gas will be introduced to mix with the air inside the Module to reduce the Oxygen level.

# Monitoring & Control

## iCOM



The iCOM control contributes to efficiency improvements by enabling more precise control of temperature and humidity and by allowing multiple XDFN units to communicate and work together as a system.

It monitors all functions and generates reports or alarms as needed. It allows a service engineer, from a centralized location, to oversee the operation of Liebert XDFN.

The iCOM unit has a Unit Diary that shares unit maintenance history with any authorized user or logged-in service contact, including records of what others have done.



## OpenComms Web Card

iCom through the OpenComms Web Card provides the Liebert XDFN system with SNMP and web-based management.

iCOM can be set to be monitored and controlled not only from a Network Management Station, but also from any PC running Microsoft® Internet Explorer™.

The animated Power Flow allows the condition of the system to quickly be determined.



## Rack Power Monitoring and Management

Power distribution inside the Rack is crucial. Emerson Network Power provides the capability to monitor and control each socket offering control of the total RMS Amp, RMS Volt and kW/h through SNMP, Telnet and WEB access.



### MultiLink and Nform

The Liebert MultiLink solution works with the Liebert XDFN system to provide a simple, easy-to-configure computer protection solution in a multi-platform networked environment. From a single workstation to a network of servers, MultiLink allows system status to be monitored and provides automatic orderly shutdown of designated computers if a power outage ever exceeds the battery capacity of the UPS.



Nform software can be configured to monitor the Liebert XDFN system for alarm notifications.

These alarms, or SNMP traps, can be received by the software and processed to trigger event actions such as e-mail alerts or local notifications. For ease of use, OpenComms Nform's graphical user interface enables device status status conditions through either a native SNMP interface or an HTML web browser interface.

# Closed Loop Cooling for High Density Racks

## Liebert XDFN with digital scroll



The cooling module, self-contained in the XDFN product, is a modular direct expansion unit with remote air cooled condenser.

The cooling capacity is modulating thanks to the use of **digital scroll technology, an innovative solution exclusively offered by Liebert.** The refrigerant used is R407C. The Cooling module is available in different configurations, including chilled water on demand.

The modular design of Liebert XDFN Closed Loop Rack Cooling allows for the racks and cooling modules to be combined, in order to provide **cooling to multiple racks.**

### Integrated 42U Racks and Accessories

Liebert XDFN features a 42U Rack that can be configured according to users needs with the following accessories:

- Transparent or Solid Doors
- Basic Power Strip up to 48 outlets/rack
- Monitoring and Controlled sockets
- External keyboard tray
- Cable Management
- Rack Mounted on line UPS

*Liebert XDFN can be provided with UPS, PDU, Emergency back-up ventilation and Fire extinguishing.*

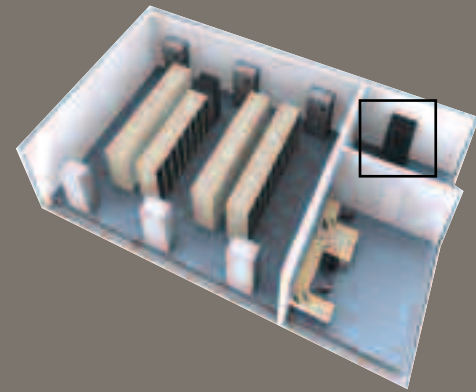


Liebert XDFN: can be configured according to user needs



## Unique economical benefits

- Preventive environmental monitoring to guarantee maximum uptime
- Back-up ventilation to enable continued operation in case of mains power failure
- Hot-swap configuration to minimize restoration time after failure
- No noise impact on Datacentre
- Universal solution, no need for a dedicated installation area
- Smaller footprint than any equivalent solution with n+1 redundancy
- Each cabinet works independently without affecting adjacent units
- Fire extinguishing system within the rack
- Low Total Cost of Ownership
- Simple maintenance
- High efficiency



Liebert XDFN is a perfect solution **also** for small offices and **small Datacentres**. It could be easily installed in a separate technical room without impacting on the existing cooling configuration.

## Liebert XDFN Technical Data

### Performances

Net Sensible cooling capacity DX	kW	Up to 23,6
Net Sensible Cooling Capacities CW	kW	Up to 25,6

Dimension & Weight	Cooling Module + Rack		Cooling Module	
Width	mm	1600	mm	750
Depth	mm	1200	mm	1200
Height	mm	2400	mm	2400
Weight	kg	764	kg	445

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