ColdLogik™

Perfect climate - Perfect control

New Generation Computer Room Cooling

ColdLogik™

Incorporating the New

ColdLogik Management System & Leak Prevention System (patent pending)

Systems

Computer Room Cooling

Principle

Data centres are the power house of today's global economy, without modern computing power applied to all facets of today's advanced economies, the quality of life would be very different.

However great the benefits, there is one unfortunate fact that today's data centres are highly inefficient, in their use of energy and their subsequent effect on the global climate.

ColdLogik replaces the traditional approach to data centre cooling, allowing loads of up to 45kW per cabinet with the added benefit of removing real estate problems inherent with hot aisle cold aisle and aisle containment designs.

The waste heat generated by equipment within the cabinets is removed at source by water cooling, without the risk of leakage in the data centre by our patent pending leak prevention system.

ColdLogik allows cooling water temperatures to rise from the traditional 6ºC reducing chiller size and energy costs and increasing the availability of energy efficient 'free cooling'.

The **ColdLogik** Management System allows the doors to operate individually or as a system to maintain the room at the correct temperature even with external heat loads and eliminates the risk of condensation.

ColdLogik System Features

- Up to 45kW sensible cooling per 600 & 800 wide cabinet
  80kW sensible cooling available 4th quarter 2009
- Up to 90% energy saving
- The only water cooled solution with the patent pending Leak Prevention System
- Energy efficient '**ColdLogik** Management System'
- Retro-fit capability to any already installed OEM rack
- Built in redundancy
- Condensate free operation
- Lower capital expenditure than standard data centre builds, especially where aisle containment systems are adopted
- Modular and scalable

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WHY ColdLogik?

Reduction in energy consumption
ColdLogik is the only system that can accept water temperatures at 14ºC and up to 22ºC and achieve heat dissipation of up to 45kW per cabinet. This reduces the size of the chiller unit/s required in turn reducing energy consumption by up to 35%. Further energy reductions are possible with the use of a free cooling module which can give up to a further 60% saving. Together a massive 90% potential energy saving is possible throughout the life of the data centre.

Reduced carbon footprint
ColdLogik is simply the most effective cooling system on the market and the energy efficiency achieved means that funding and taxation benefits are available to qualifying companies through the Carbon Trust and the Enhanced Capital Allowance Scheme initiatives.

Capital cost reductions
ColdLogik System does not require computer room air conditioning, raised flooring or hot aisle or cold aisle containment. It has better utilisation of floor space and loses no 'U' Space and no side of cabinet floor space.

Increased server density
The enhanced efficiency of the ColdLogik System, allows up to 45kW to be removed from a single 600mm wide cabinet, which enables server densities to be substantially increased, improving space utilisation. Alternatively, if the facility is unlikely to see significant further growth in the number of servers to be housed, the overall size of the room can be constrained.

Up to 93% Energy savings

HOW?

CRAC System for 100kW data centre load – uses more than 40kW of power

ColdLogik System for 100kW data centre load – uses less than 4kW of power

PLUS

ColdLogik can reduce the Power Usage Effectiveness 'PUE' in a well run data centre by 25%

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ColdLogik – How it Works:

1. Chilled water is provided by a free cooling module, chiller or a combination of both.
2. The resulting chilled water is pumped through the pipework by the patent pending Leak Prevention System.
3. Chilled water is then drawn through each rear door cooler. The waste heat from the active equipment housed within the cabinets is rejected to a heat exchanger matrix. The net result is that the exhaust air returning back into the room is at ambient temperature and therefore has no impact upon the interior of the data centre.
4. The **ColdLogik** System Controllers' continually monitor the 'air off' temperatures and the returning water temperature. This in turn regulates the rear door cooler fan speeds, the inlet water temperature and volume.

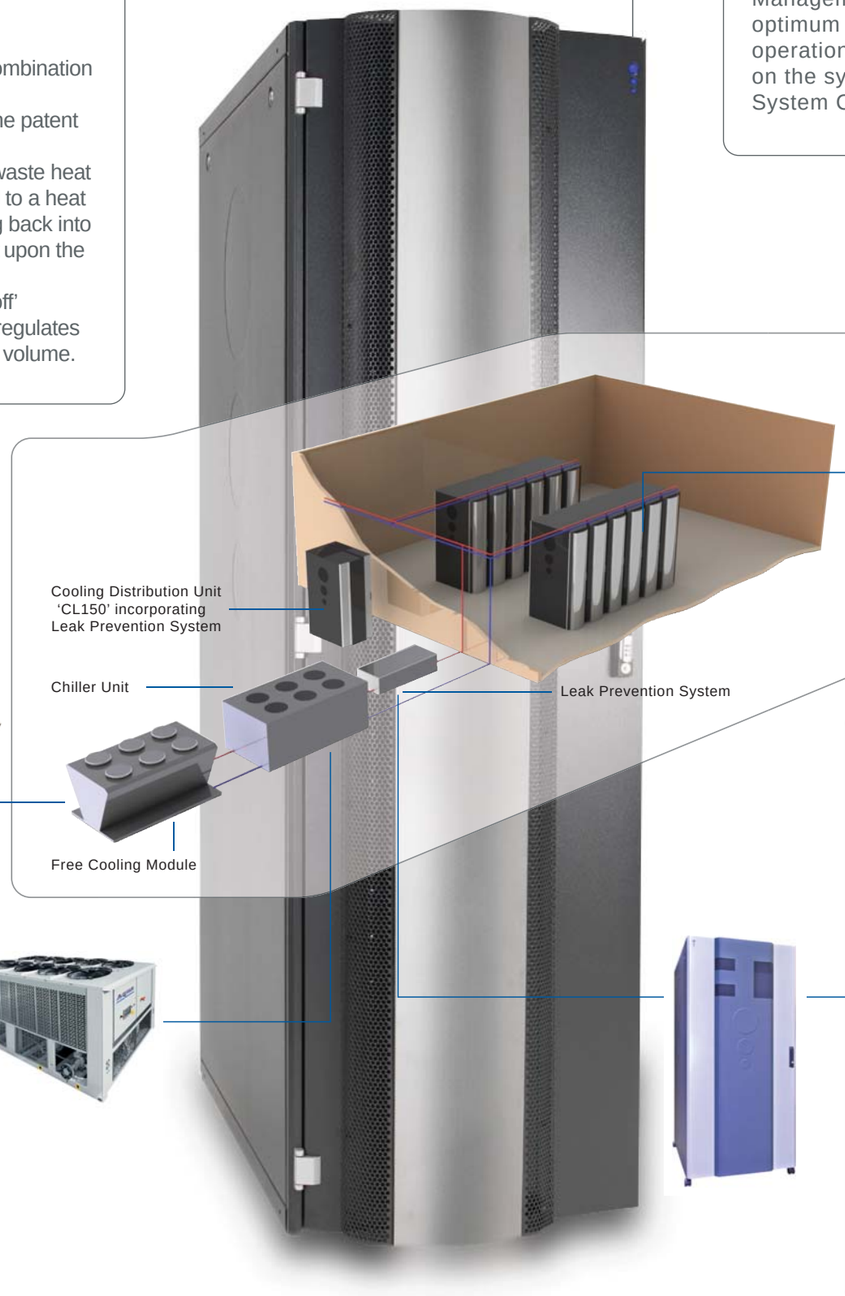
Saving money - Free Cooling Module

Free cooling modules can be supplied as a factory fitted extra within the chiller cubicle when space is at a premium or as a separate self contained unit.

All the units are designed to the closest ambient for the desired system water temperature which at worse case is within 3ºC.

Our free coolers are all fitted with inverter driven energy efficient fans to increase energy saving when ambient falls below the point of free cooling.

These can be fitted to an existing facility when changing from a standard CRAC to a **ColdLogik** system.



CL20 Rear Door Cooler

Energy efficient - Chiller

Our chiller systems use the latest technology with either high efficiency scroll compressors or oil-less magnetically driven centrifugal compressors both with high EER and ESEER energy figures.

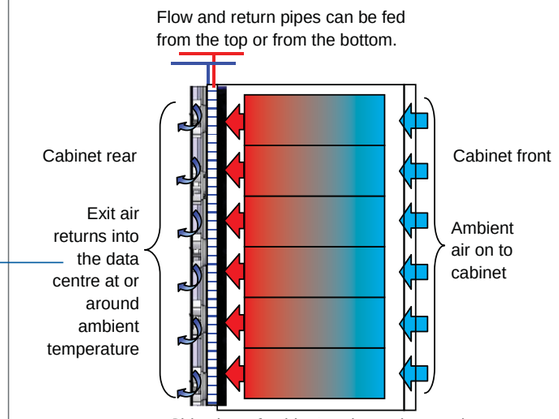
Our custom built units from 10 to 2500kW can cater for any ambient from -40ºC to +55ºC or adverse environmental conditions.

The chillers can be supplied complete as a stand alone package with pumps and tanks or as part of a larger system.

The chiller controls communicate directly with the **ColdLogik** system controller and can vary the water temperature as required.

Intelligence - ColdLogik Management System

The key element to controlling the room environment is the '**ColdLogik** Management System', each rear door cooler is intelligently managed for optimum efficiency by embedded computers that continually adjust the operational parameters in response to the heat removal demands placed on the system. By making continual load adjustments the **ColdLogik** System Controllers maintain the room ambient temperature.



Side view of cabinet and rear door cooler

Peace of mind - Leak Prevention System

The new patent pending Leak Prevention System is another **ColdLogik** initiative. By putting the data centre loop including the rear door coolers on a negative pressure circuit the whole data centre is safe from potential leaks in places where it can be least afforded. In the unlikely event say a coupling became loose or a hole was drilled into a pipe, air would be pulled into the gap/hole, thereby preventing water from escaping. The resulting air now in the circuit is drawn through to a tank inside or outside the chiller, where it is finally vented out of the system and prevented from continuing back around the loop. Inline sensors detect a leak this in turn provides a warning alerting the user to the problem. Importantly the **ColdLogik** system will continue to work, with no notable effect to its cooling capabilities. As with all aspects of the **ColdLogik** system the 'LPS' can be retrofitted to an existing circuit, is modular in design and therefore scalable, so as your data centre grows so can **ColdLogik**.

Cooling Distribution Unit 'CL150'

In many cases it is necessary to tap off an existing chiller which already supplies chilled water to other on site services at 6˚C. If chilled water from the primary circuit were to remain at this temperature condensate would be induced within the rear door coolers. The CL150 Cooling Distribution Unit 'CDU' has been designed to provide close control cooling to the rear door coolers eliminating the potential of condensate. The process side water, otherwise known as the secondary circuit is a sealed pressurised system with the heat extracted from the rear door coolers being rejected to a raw chilled water circuit via a stainless steel plate heat exchanger.

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CL20 Series Rear Door Cooler 'RDC' Interface Frame

The CL20 RDC Interface frame enables users to continue using their existing cabinets and still gain the benefits of the **ColdLogik** system.

Working in harmony with the incumbent air conditioning system, the CL20 RDC helps reduce energy cost, enables greater use of cabinet space, prevents hot spots, enables greater processing speeds and because the existing cabinet is used this will save costly down time.

An example of a CL20 RDC door fitted to an IBM Enterprise cabinet.

The Interface Frame provides a perfect structure to allow the CL20 RDC to be mounted on to an existing populated cabinet.

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CL20 Rear Door Coolers - Specifications

Description	C4	C8	C12
Range Heights 42U & 48U Widths 600mm & 800mm *Other sizes available on request*	✓	✓	✓
Weight	**63.4 to 76kg**	**63.4 to 76kg**	**65.8 to 78kg**
Power 110-240v Input Management control box IEC C13 Input ✓* *Optional when ordering coolant control only*	✓ ✓*	✓ ✓	✓ ✓
Fans AC 230v Backward Curved Centrifugal Fans incorporating EC technology Current consumption each 0.63A max Air flow 1040 m3/hr each Speed rotation 100% v 2935rpm IP54 rated Less than 69 dBA @ 1m Sound power per fan (full load)	**0 to 5 fans**	**5 fans**	**5 fans**
ColdLogik Management System			
Fixed fan speed	✓*	NA	NA
Individual fan fail sensing	NA	✓	✓
Single or dual bank fan speed control	NA	✓*	✓*
Common Alarm (including all alarms below)	NA	✓	✓
Single or dual bank fan alarm	NA	✓*	✓*
Local status indicator alarm	NA	✓	✓
Leak prevention alarm	✓*	✓*	✓*
Power failure alarm	NA	✓	✓
Coolant flow control	✓*	✓*	✓*
Chiller temperature control	✓*	✓*	✓*
BMS/Network remote status monitoring (via network card or modbus)	NA	✓	✓
LCD Status screen per cabinet	NA	✓*	✓*
Control screen per group	NA	✓*	✓*
System & fault logging	NA	✓*	✓*
✓* *Optional*			
Coil			
Volume capacity	**5.8 litres**	**5.8 litres**	**8.2 litres**
Pressure drop	**20 kPa***	**37 kPa***	**17 kPa***
Fluid Flow	**2.2* m³/h**	**3.6* m³/h**	**2.75* m³/h**
Nominal Performance (Sensible Cooling)	**Up to 20kW**	**Up to 30kW**	**Up to 40kW**
Max Performance (Sensible Cooling)	**Up to 25kW**	**Up to 35kW**	**Up to 45kW**
*Nominal figures Nominal calculations = air off equipment @ 48˚C, with a maximum air off coil @ 24˚C and chilled water supplied @ 14˚C			

Colour
RAL 7016 Other colours available upon request. Stainless steel
Door Connections and Hoses
22mm full bore x Length 'installation dependant'. Stainless steel over braided flexible hose
Standards
CE and FCC approved
All in cabinet cabling complies with UL listings
All electrical components are RoHS compliant EMC compliant
ISO 9001 – 2000 Accreditation

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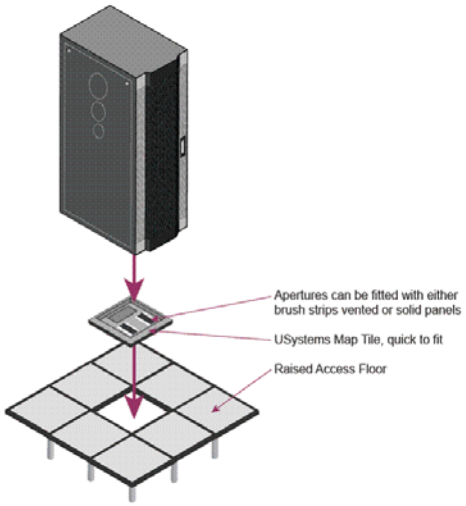
Multi-APplication ‘MAP’ Tile



- Prevents air pressure loss in raised flooring
- No cutting of floor tiles
- Speed up installation time
- Weight Tested to 1500kg
- Save energy costs
- Various sizes available
- Designed to fit with all types of raised floor
- Compatible with any vendors 19” cabinets

AirTech™ Plus Server Cabinet

The 6210 AirTech Plus Server carries forward many of the benefits of the open structure 6210 cabling cabinet but with the addition of high airflow doors

- Value added styling
- Open structure design
- In excess of 85% venting
- Superior cable management
- Versatile design
- 1200kg weight loading
- Secure quick release cladding
- Multi-vendor practice
- CL20 Rear Door compliant
- Various locking options available
- MAP Tile compliant

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