

33kW



> **OnRak**

High density rear door heat exchanger

- > Energy Efficiency Ratio up to 166
- > Up to 33 kW variable cooling
- > Designed to fit 42 - 47U racks
- > Depth 200mm
- > Can be supplied with integrated rack or adapted to fit a customer-specific rack

www.airedale.com

OnRak

The OnRak is a compact rear door heat exchanger designed to manage discharge temperatures from the server into the aisle space. In dealing with the heat load closer to the source, the OnRak is highly efficient in power usage and floor space.

Part of the LogiCool range of IT cooling solutions, the OnRak offers an expandable cooling system that can be supplied with an industry standard data rack (42 - 47U) or a mating frame to fit a customer-specific rack. The OnRak's slim configuration adds only 200mm to the depth of the rack, reducing the cooling space claim yet providing up to 33kW of cooling.

Efficient, adaptable, resilient

Enhanced by smart control logic and EC fan technology, the OnRak has an Energy Efficiency Ratio (EER) up to 166. A means of comparing efficiency, the EER is a ratio of cooling divided by power input. Over a year, an OnRak with an EER of 144 will achieve 88% saving in power input compared with a traditional precision air conditioning unit with the same capacity.

To create an integrated, flexible cooling solution for the data centre, multiple OnRak units can be linked with an Airedale large capacity air cooled chiller using sophisticated AireTronix controls technology. Substantial energy savings are achieved when the OnRak is matched with a free-cooling chiller.



OnRak integrated with rack cabinet

Maximising uptime

- > n+1 fan configuration
- > 'Door open' air flow management
- > 'Hot swappable' fan management
- > Easily removable control panel
- > Static transfer switch for instant power supply changeover (option)
- > Uninterrupted power supply (UPS) (option)

Key technical data

- > Two product configurations: n (100% air volume); optional n+1 (75% air volume)
- > Cooling capacity: 33kW (n); 28kW (n+1)
- > Variable speed fans for precise cooling between 3 – 33kW
- > EC axial fans for ultimate efficiency: EER of 108 (n); 174 (n+1)
- > Advanced AireTronix control system solutions
- > Flexible water connections maintain cooling when the door is open
- > Self-regulating constant flow control simplifies commissioning
- > Water detection and automatic isolation
- > High efficiency aluminium fin heat exchanger and integral coil guard
- > Isolating solenoid valves (option)



The OnRak cools hot air within the server rack before it reaches the room

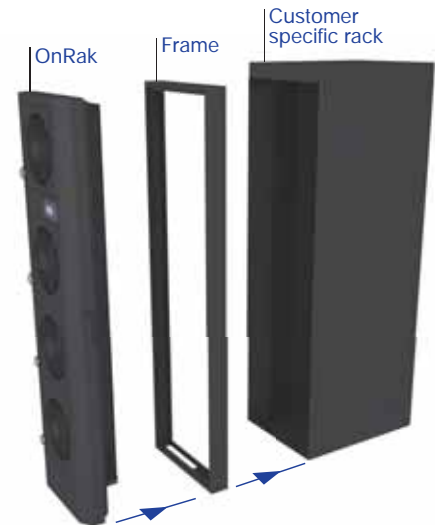
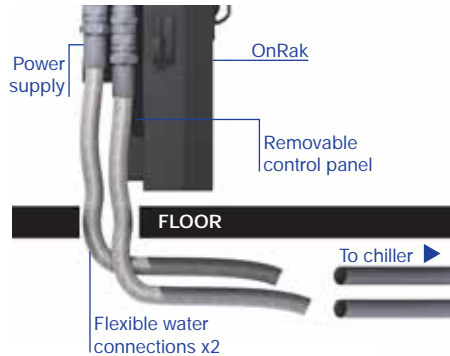
Typical applications



Key feature: Simple connections to customer-specific rack

To apply the OnRak to a customer-specific rack with a different width and / or U size, the OnRak can be supplied with an appropriate mating frame which is fitted to the rack cabinet. The OnRak door is then simply dropped onto the frame via lift-off hinges.

Two flexible, stainless steel braided hoses connect the coil to the chilled water supply. The flexibility of the hoses allows the OnRak door to be easily opened for accessing hardware within the server cabinet, without the need to disconnect services or disrupt cooling.

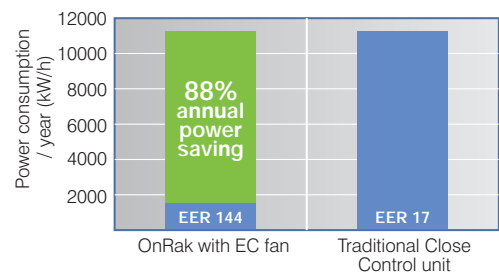


Key feature: EC axial fans for ultimate efficiency at part load

Since most servers operate at less than 100% capacity, energy costs can be significantly reduced when cooling equipment operates at part load. Since the OnRak has been engineered with very low air flow resistance, it can accommodate latest EC axial fan technology which offers greatly enhanced fan efficiency particularly at part load.

An OnRak with EC fan technology and offering 23kW of cooling uses 0.161kW of power and has an EER of 144. A traditional chilled water precision air conditioning unit delivering same amount of cooling uses 1.3kW of power and has an EER of 17. Over a year, the OnRak in this example will consume 1,410kWhs of power against 11,388kWhs of the precision air conditioning unit, representing a saving of 88% in power input (see graph right).

Power consumption saving*
(OnRak v conventional precision air conditioning unit)

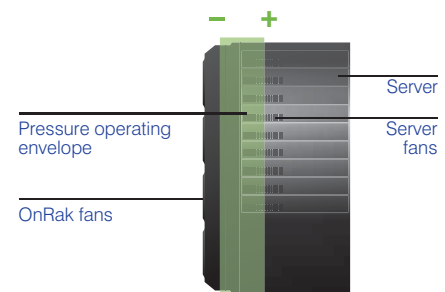


* Both units running in same application, delivering same amount of cooling performance

Key feature: Pressure differential management

By managing pressure at the rear of the server rack, the OnRak controls its fans to ensure they mirror the fans cooling the servers inside the rack cabinet. The server fans draw air through the servers to the back of the rack where the OnRak's fans pull the air from the rack and discharge it into the room.

Through active pressure differential control, the OnRak maintains pressure in the rear of the rack within the server design envelope, whilst still ensuring temperature is controlled.

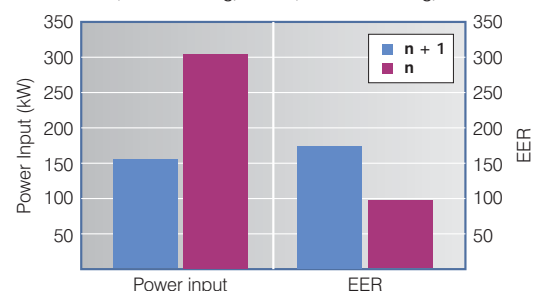


Key option: n+1 fan configuration for increased efficiency and uptime

Optional n+1 fan configuration enhanced by smart control logic and EC fan technology, gives the OnRak built-in redundancy and excellent part load efficiencies, increasing OnRak's EER from 108 to 166 during part load operation.

To increase uptime, the OnRak's optional n+1 fan configuration is so designed that its four fans run at 75% capacity during normal operation. If one fan fails, the other three immediately speed up to 100% to provide the same total amount of cooling and maintain temperature control. They then modulate back when a fourth fan is in operation again. As a standard redundancy feature, all fans are 'hot swappable'.

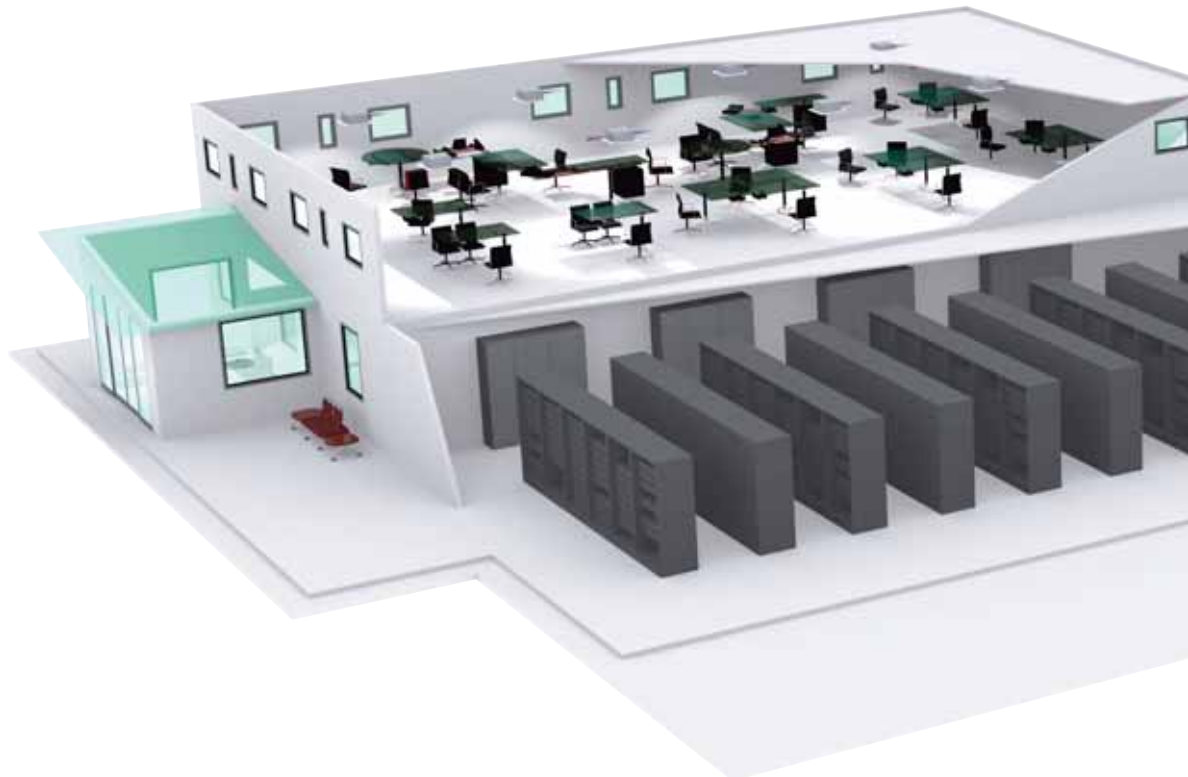
Comparison of power inputs:
n (33kW cooling), n+1 (28kW of cooling)*



OnRak Part of the LogiCool range of IT cooling solutions

The OnRak provides a versatile solution in medium to high density cooling applications whilst taking minimum extra space in the room. One or more OnRak units can be linked with a single chiller to eliminate hot spots or meet increased heat loads.

Multiple OnRak units can form part of an intelligent, high efficiency cooling solution across a whole data centre in which cooling products interact and communicate, integrated by Airedale's highly advanced controls system technology to maximise plant capability whilst reducing energy usage.



Chilled water cassette

2 - 11kW

11 models

Smaller model fits into space of a standard ceiling tile

4 pipe cassette with cooling and heating coil

2 pipe model with heating option



SmartCool

60 - 150kW

DX R410A and/or chilled water

Single/dual circuit or dual cool (with free-cooling variant)

EC fan option

30 - 90 Hz inverter compressor option

Dual power supply option



OnRak

Integrated with rack cabinet

33kW

Two models: n (EER >100); n+1 (EER 174)

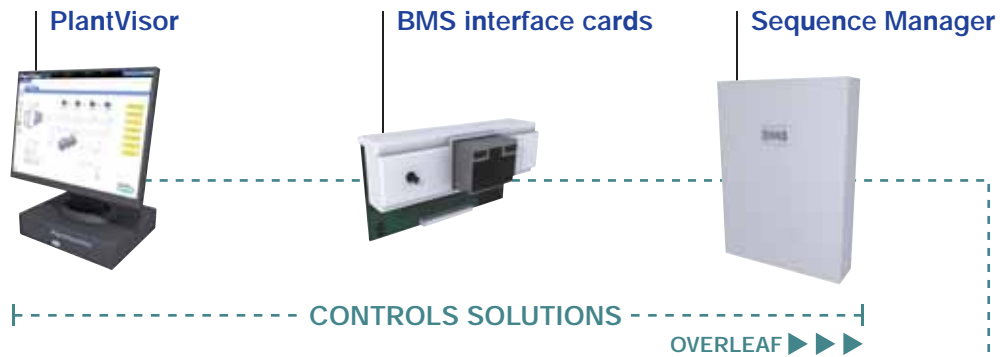
EC fans

Pressure differential management

Fits 42 - 48U racks or can be retrofitted

Depth c. 200mm, weight < 70kg

OnRak
Integrate



ed with aisle containment



LogiCool FreeCool
20kW/40kW
Air cooled free-cooling
R410A chiller
Supplies chilled water directly to
the OnRak/other rack-mounted
heat exchanger/airside cooling
systems
Digital scroll compressors



TurboChill
200 - 1100kW (infinitely variable)
Air cooled chiller
Turbocor compressor technology
Single or dual circuit
EC fans
Integral low current start of 2a
ETL listed (www.eca.gov.uk)
Free-cooling model available -
details on request



Condenser
12 - 165kW
Air cooled R410A / R407C
16 models
EC fan option
Small footprint, low profile, low
sound
Horizontal/vertical unit design

AIRETronix controls

The OnRak is equipped with very latest, intelligent Airetronix microprocessor specially developed by Airedale to facilitate automation and optimisation of the system. The fully programmable microprocessor is linked with key components within the cooling system, allowing sophisticated, modulating and self-optimising control for increased energy efficiency.

Tri-colour LED status display

A tri-colour LED display gives an immediate visual indication of the unit status from a distance, with red denoting critical status, orange being non-critical and green, all systems functioning. The controller's door-mounted display features a semi-graphical screen and keypad with optional audible alarm function and allows adjustment of control parameters and viewing of the unit's operating status.



OnRak controls management

- > Supply air temperature control
- > Fan speed modulation
- > n & n+1 fan redundancy setup
- > Dew point calculation
- > 2 way valve control
- > 'Door open' air flow management
- > Supply / return solenoid valves
- > 'Hot swappable' fans
- > Cabinet air pressure
- > Easily removable control panel

Remote supervision



Airedale BMS: PlantVisor

PlantVisor is an intelligent, powerful, latest technology BMS software programme which integrates multi-unit systems managed by intuitive AireTronix controllers and located on one or more sites, into a single, proactive control platform. With the click of a button, information can be pulled back automatically and used for remote monitoring and control including 24/7 alarm indication; time scheduling and adjustment of temperature setpoints for system optimisation and energy efficiency.

Integration

The network-capable AireTronix controller can be integrated with a wide range of BMS protocols.

Modbus®

ECHELON®
THE LONWORKS COMPANY

BACnet™

PlantVisorPRO

TREND



pCOWeb Ethernet solution

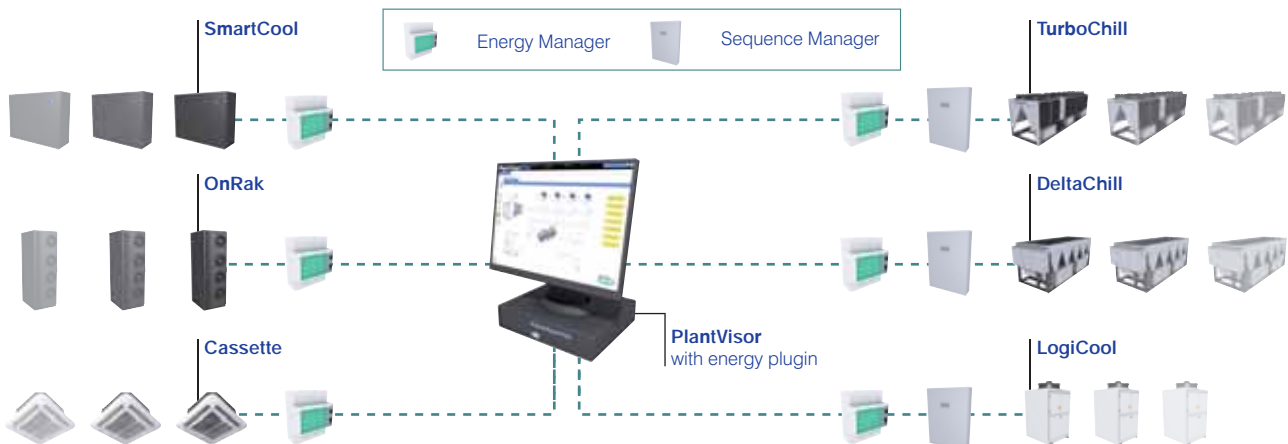
pCOWeb supervisory plug-in cards make communicating with the OnRak purely a matter of logging onto the office intranet or the web. Based on ethernet TCP/IP secure technology, BACnet and SNMP features, pCOWeb requires no proprietary cabling or monitoring software, little or no set-up on site and is pre-programmed with an IP address.

Airedale Controls - additional services

- > Software program design that will manage everything in the air conditioning system, fine-tuning it for energy efficiency
- > Remote monitoring facility – an internet-based bureau service for customers with critical sites
- > After-sales including chiller sequencing, network setup and integration
- > Live demonstration and training centre

For more information visit www.airedale.com

Optimised control system solution



Key feature: Hot swappable fans maintain cooling

Each of the OnRak's four EC axial fans are 'hot swappable' which means that a fan assembly can be removed from the unit whilst it is running and replaced with another fan assembly.

When a fan assembly is unbolted from the OnRak, a micro switch fitted to the main door assembly detects that the fan is being removed and cuts power to the fan. A signal is also sent to the unit's controller and the OnRak's other three fans speed up to maintain cooling performance.

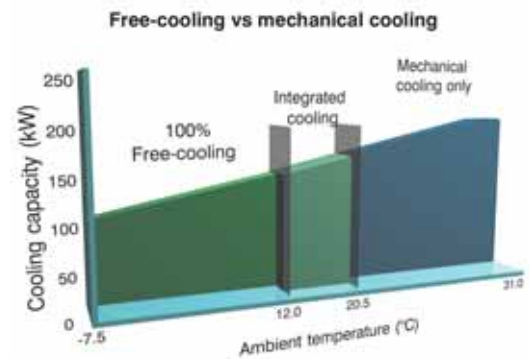


Key option: Integration with a free-cooling chiller, reduces whole life costs*

Free-cooling operates with as little as 1°C differential between ambient and return fluid temperatures. By dealing with a higher grade heat and subsequent higher processor air off temperatures, a large proportion of the year can be spent in free-cooling mode. In the 24/7 environment of a data centre, a free-cooling chiller will use very little mechanical cooling.

The LogiCool air cooled chiller for example typically saves more than 50%* of the energy consumed by a conventional chiller, by achieving 0-100% free-cooling through integrated, simultaneous mechanical / free-cooling.

* Based on Met. Office average ambient figures for London, UK at 16/21°C, 20% ethylene glycol








Technical Specifications

OnRak								
Model no.	Configuration	Cooling capacity (kW) ¹	Power consumption (kW)	EER	No. of fans	Air volume (m³/s)	Operating Weight (kg)	Dimensions (H x W x D) (mm)
LOR6042U-C033-0	n	33.2	0.306	108	4	1.8	75	2030 x 600 x 200
LOR6042U-C028-0	n+1	28.0	0.161	174	4	1.4	75	2030 x 600 x 200

1 Nominal cooling capacity based on 14 / 20°C water and 46°C air on temperature

Other Airedale products - that can be integrated into the LogiCool solution

<p>PRECISION AIR CONDITIONING</p> <p>Our precision air conditioning units maintain accurate control of room temperature and humidity. Ranges include:</p>	<p>CHILLERS</p> <p>Airedale high efficiency chillers supply chilled water to precision air conditioning systems, heat exchangers and comfort cassettes. Ranges include:</p>			
				
<p>EasiCool 6 - 60kW 76 R410A DX models (38 air cooled; 38 water cooled); 34 chilled water 6 case sizes Upflow or downflow EC fan option</p>	<p>AlphaCool 8 - 101kW 102 models: DX, chilled water or glycol free-cooling variants 5 case sizes Upflow or downflow EC fan option</p>	<p>DeltaChill 150 - 450kW 26 models with flexible options Optimised for R410A Sequenced, staged scroll compressors EC fan option</p>	<p>OptiChill 500 - 1100kW 52 models optimised for R134a Dual circuits Modulating screw compressors EC fans ETL listed</p>	<p>Ultima Compact FreeCool 75 - 450kW 45 models Integrated free-cooling Multiple scroll compressors Dual circuits ETL listed</p>

Airedale energy efficiency



At Airedale we work with our customers to deliver quality, reliable, energy-efficient cooling solutions that are right for each application and the environment. Dedicated research and innovative design combined with a vast pool of knowledge and a state-of-the-art Test Centre mean that Airedale technology never stands still and is continually moving forward. Our committed team of engineers are constantly developing new products for improved performance balanced with even better energy efficiency.



SafeCool Service Plan – maintaining your OnRak's efficiency

The OnRak is a highly efficient system. To make sure its full efficiency is realised after leaving our factory, we recommend a **SafeCool** Service Plan. This provides a planned, preventative maintenance package to sustain the optimum efficiency of your system and enable you to see real savings in energy costs and reduced carbon emissions.

A priority, 24/7 emergency helpline; professional support and call-out service is on hand throughout the year with guaranteed response by a fully qualified Airedale engineer. **SafeCool** also ensures that a system is F Gas compliant.



For more information visit www.airedale.com



For customers outside the UK, our international distributors trained by Airedale would be pleased to offer service on Airedale units.



- > For the latest information on Airedale products please visit: www.airedale.com
- > Please refer to the technical manuals for more detailed information

Your nearest Airedale distributor is:



ISO 14001
EMSS2086



ISO 9001
FM00542



air conditioning for every environment

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