Airedale
APPLIED THERMAL INNOVATION

Case study | Data centre

ONRAK | ULTIMA COMPACT FREECOOL

University of Leeds
Case study

The challenge

The high performance computing (HPC) facility of the University of Leeds provides its researchers with access to a large number of computer intensive servers for computational modeling. Higher densities have created an extra 30kW of load per 42U rack, which could not be cooled by conventional CRAC units since this would involve space, design and cabling issues. The University, assisted by the School of Mechanical Engineering, sought an alternative solution that meets the University's criteria of investment in energy efficient, latest technology in its data centres.

Airedale solution

- 3 x OnRak™ 28kW rear door heat exchangers cooling three high density racks in the HPC facility
- 2 x Ultima™ Compact FreeCool 240kW chillers offering free-cooling for up to 65% of the year

In more detail ▶

> *"Our HPC facility at Leeds is growing and without the use of Airedale's OnRak™ rear door coolers it would not be possible to go to the high densities which are necessary for our HPC applications."*
>
> **Dr Jon Summers**
> **Senior Lecturer, Institute of Thermofluids, Surfaces and Interfaces, School of Mechanical Engineering**

In more detail

University of Leeds

OnRak™ EER up to 166

The significantly higher densities in the high performance computing (HPC) facility present the potential for more efficient cooling. In dealing with the heat removal that is closer to the source, the OnRak™ consumes substantially less power than conventional room cooling and offers the same amount of cooling with a smaller unit compared with a conventional CRAC unit. University researchers found that each of the OnRak™ 28kW doors provide up to an extra 3kW of cooling per rack, for just 0.1kW of extra fan power input, compared with passive rear door coolers.

Up to 35% energy saving

The OnRak™ units are connected to two existing Airedale Ultima™ Compact FreeCool 240kW chillers located on the roof of the University's Houldsworth building. The higher server exhaust temperatures of the HPC facility considerably increase the free-cooling threshold, so for up to 65% of the year, the chillers can leverage cooler ambient temperatures to achieve up to 35% savings in energy compared with a conventional DX system (London, UK).

Saving space

The OnRak™ has a depth of only 200mm, making it extremely efficient in saving valuable floor space.

HPC: Improved performance

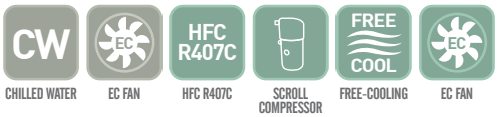
Hot swappable fans and 'door open' air flow management increase the resilience of the OnRak™, improving the operational performance of the HPC.

"Meeting our needs for novel cooling

Airedale's OnRak™ meets the need for novel cooling solutions in the HPC arena, where heat load per square metre has increased dramatically. By meeting our space constraints and slotting into our existing cooling loop, the OnRak™ doors have saved us space in an already densely packed environment. The OnRak™ also gives us the flexibility to fit rear door heat exchangers to legacy or new cabinets from any manufacturer."

Dr Jon Summers
Senior Lecturer, Institute of Thermofluids, Surfaces and Interfaces, School of Mechanical Engineering, University of Leeds

ONRAK™ ULTIMA™ COMPACT FREECOOL



Airedale
APPLIED THERMAL INNOVATION
www.airedale.com

Airedale International Air Conditioning Limited | Leeds Road, Rawdon, Leeds LS19 6JY, England
Tel: +44 (0) 113 239 1000 **Fax:** +44 (0) 113 250 7219 **E-Mail:** enquiries@airedale.com

A MODINE Company