

University of Portsmouth Data Centre

Case study



About

The University of Portsmouth is ranked amongst the top 400 universities in the world and the leading modern university in the UK, according to the Times Higher Education World University Rankings. The University has over 23,000 students, including 3,000 overseas students, and employs more than 2,500 academic and support staff.

The Challenge

The University had a requirement for a high density, energy efficient cooling facility for its new £2.25m data centre.

Working in conjunction with Sudlows, Airedale was selected for its ability to offer a complete solution encompassing British manufactured, high performance systems, advanced controls and expertise in integrating to third party systems, commissioning and on-going service and support.

Airedale solution

- 2 x 34kW SmartCool™ chilled water (CW) precision air conditioning units
- 35 x high density OnRak™ rear door IT cooling units (up to 25kW per rack)
- 2 x 500kW DeltaChill™ FreeCool chillers
- 1 x chiller sequence manager/secondary pump controller
- ACIS™ Building Management System (BMS)
- Airedale commissioning and on-going preventative maintenance, spares & service



In more detail

University of Portsmouth Data Centre



Integrated controls

Airedale's ACIS™ web-based control interface delivers intelligent, graphical remote management of the data centre, in addition to useful tools such as heat maps and reporting. ACIS™ interfaces with multiple protocols to monitor all elements of the site including:

- Airedale chillers and precision air conditioning (PAC) units
- External generator, building fresh air supply, battery and build room air conditioning units
- UPS room equipment including UPS systems, main LV panel and power meters
- Water leak detection system
- Fire suppression system including: VESDA, gas suppression system and house fire alarm

ACIS™ also integrates with the legacy BMS allowing visibility of data centre alarms from the main site.

Benefits

- **Comprehensive control and energy efficiency**
ACIS™ BMS provides full control of the data centre environment and integrates with chillers and pumps to minimise system energy consumption, delivering up to 95% free cooling per annum (based on London, UK temperature figures)
- **EER up to 174.3**
OnRak™ units and EC fan technology deliver excellent part-load efficiencies
- **DeltaChill™ FreeCool**
smart controls algorithms enable the chiller to give the best energy balance for all operating conditions
- **Live and historical PUE calculations**
- **High level of redundancy on all critical plant**
- **Airedale multidisciplinary solution**
Simplifies design, integration and on-going management of the site

Energy efficiency

The Airedale solution provides indirect free cooling to the data centre, with direct fresh air free cooling the UPS room.

The system is optimised via a dynamic chilled water temperature set point adjustment feature to deliver free cooling up to 95% of the year depending on ambient temperature. When free cooling is available, chilled water set points are maximised up to 20°C to prolong free cooling.



ACIS™ sequences the two chillers in run standby operation, with the standby chiller assisting in free cooling mode, and also adjusts the supply water temperature to

ensure it is above the dew point of the data centre and so prevent condensation. The secondary pumps are modulated to provide the correct amount of flow dependent on the load and to maintain air temperature in the data centre.

A global set point adjustment on ACIS™ simplifies management of the PAC and OnRak™ IT cooling units by allowing the user to adjust them in one place. When the data centre is unoccupied, the temperature is set to 27°C. A bespoke feature of the system allows the set point to be overridden by a key switch to lower the temperature to a comfortable working environment of 24°C when needed.

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“The new data centre is built around cutting-edge design with Airedale's systems very much at its core. This is an excellent facility that the University can rely upon to deliver world class academic support and research development”

James Holland, Network & Security Services Manager
Information Services, University of Portsmouth

Results

Airedale's expertise lay in its ability to provide a single solution that allows the University total control of the entire data centre cooling plant, bringing significant energy savings and a projected PUE level of 1.14 (load dependent).



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