Keeping Your Data Cool

By cfes
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The simplest data centre is a tier one data centre, which is basic computer room. The most stringent level is a tier four data centre, which is designed to host mission critical computer systems, with fully redundant subsystems and compartmentalised security zones.

Data centres are extremely important and are critical to the success of today's businesses who are reliant on such data centres to hold all their important files and back up their servers. It is important that business' can access this data 24/7, 365 days a year.

By optimising the ambient temperature and humidity prevents any unwanted technological problems arising from the environment in which our servers are stored.
As electricity is used to power the servers, hard drives and processors, these all generate large amounts of heat which raises the temperature in the data centre. Unless the heat is removed, the ambient temperature will rise, which can result in electronic equipment malfunction and system failures.

By controlling the air temperature, the server components at board level are kept within the manufacturer's specified temperature/humidity range. Air conditioning systems help control humidity by cooling the return space air below the dew point. Too much humidity, and water may begin to condense on internal components. ASHRAE's "Thermal Guidelines for Data Processing Environments" recommends a temperature range of 20–25 °C (68–75 °F) and humidity range of 40–55% with a maximum dew point of 17°C as optimal for data centre conditions, problems can occur when environments exceed this.

To enforce these conditions and ensure the consistent running of the centre, cfes' air conditioning division were called to design and install an efficient cooling system within its data centre, using chilled water as the cooling medium.

Many of the data centres servers are online 24/7 and with the huge about of technical equipment all under one roof, temperature, humidity and air quality must be strictly maintained, to eliminating any servers from failing. A consistent ambient cool temperature and a regular airflow should allow efficient heat transfer and control of static, which in turn should keep the servers running efficiently.

cfes identified the Airedale Optichill High Efficiency Plus Air Cooled chillers to be installed as central plant to serve a network of 125kW AlphaCool Plus downflow units located in the data floors. cfes specified the Airedale Optichill units due to their large, diverse cooling loads with its low energy and low sound cooling solution, designed to minimise environmental impact. Airedale's close control range is particularly suitable for high-tech environments, where 24/7 accurate control of temperature and humidity is essential. OptiChill boasts a small footprint and has an ESEER ratio above 3.5, which is ideal for close control,

process and comfort cooling, involving large, diverse cooling loads.

cfes specified Durapipe SuperFLO pipework in sizes up to 225mm in diameter to transport chilled water from the 1MW central chiller plant to a network of 125kW close control down flow units situated within each data floor.

Next to electrical power, air-cooling warrants the second largest mechanical and electrical capital investment in a data centre, however, this cost has been vastly reduced, thanks to the superior energy efficiency of the system. Furthermore, the OptiChill range of chillers are included on the Energy Technology List, which relates to the Enhanced Capital Allowance (ECA). Under the ECA scheme, as the datacentre invested in this energy saving product, they can claim 100% first-year capital allowances on their spending.

cfes raised the floor of the data centre by 600mm to cater for better and more uniformed air distribution. This provided a plenum for air to circulate below the floor, as part of the cooling system, as well as providing space for power cabling.

cfes also installed an Airedale Alphacool air conditioning unit into the company's UPS room. The AlphaCool is designed to provide specialist IT environments with maximum cooling capabilities and precise environmental control tolerances while reducing footprint and service downtime to an absolute minimum. This system offers complete flexbility and exceptional cooling capacity per unit footprint (52 kW/m2). Direct drive, backward-curved impeller fans are fitted as standard across the AlphaCool range. A key feature of the direct drive fans is a high performance impeller that is dynamically balanced for maximum efficiency, offering significant typical energy savings of between 30 and 40%. The system also comes with an AireTronix controller, which allows for intelligent unit control and full communication to a BMS system.

For more information about cfes Air Conditioning please call 01420 22622 or visit www.cfes.co.uk

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*cfes Medical Construction
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