Data Centre

Colt's modular data centre benefits from Eaton-Williams energy saving cooling technology

Eaton-Williams®
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Case Study

Building on its long experience of cooling data centres, Eaton-Williams® has designed and supplied a bespoke cooling solution for Colt's flagship modular data centre in North London.

The London 3 modular data centre is a cutting edge tier 3 managed services site. The data centre has been designed as modules of 500m² which can be constructed in less than four months offering customers a highly power-efficient turnkey solution.

In addition as a result of the unique construction techniques used to build the modular data centre, customers have the added flexibility of being able to choose where they house it – whether in a Colt location or alternate customer site of choice, anywhere in Europe.

"Eaton-Williams engineered a high quality, flexible and innovative solution specifically designed to meet our demanding performance specifications."

There is also the added ability to build large-scale data centres in 500m² increments to the size and layout of choice. This enables customers to expand the site as their needs grow by simply adding further modules.

Colt's overriding demand was for optimum energy efficiency without compromising operational resilience. The result, known as the CTF, relies primarily on outside air to provide the cooling. Although fitted with conventional refrigeration for those occasions when the outside temperature is above acceptable levels, the CTF optimises the use of the free cooling from the outside air and so contributes to the impressive overall data centre PUE of 1.21.

Cooling is an essential element in Colt's modular data centre solution. Having worked with Eaton-Williams for many years, Colt selected Eaton-Williams' because of it's ability to meet its demanding performance specifications.

Eaton-Williams' highly efficient and reliable cooling solutions means that Colt has the ideal partner to deliver and develop modular solutions to our customers," says a Colt spokesman.

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With power costs a major concern for data centres, optimising energy efficiencies was a key objective and addresses Colt's environmental concerns.

Each 500m² modular data centre has 12 high efficiency CTF cooling units arrayed across the end of the module and outside the white space. Each unit has multiple variable speed Electronically Commutated (EC) fans and compressors, to minimise energy use and provide N+1 resilience and is designed to maintain the data centre at 21˚c ± 3˚c and humidity between 20 and 80% RH.

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The whole conditioning system is based on complex control algorithms designed to manage the CTF year round 24/7, to deliver supply air at 18 – 24°C and 20 – 80% RH conditions irrespective of data hall load and outside temperature. The unit controller is integrated to the facility's Building Management System (BMS) to seamlessly switch between operating modes to ensure the most energy efficient delivery of cooling to precisely match the data centre requirements.

Whenever ambient temperatures permit the unit provides fresh air cooling. From 100% fresh air at 24°C, as the ambient temperature drops it automatically mixes warm return air with cold ambient fresh air to maintain the desired supply air temperature.

Benefits

- Supply air from 18 - 24°C
- RH from 20 - 80%
- Seamless BMS integration
- Lower PUE
- Reduced carbon footprint

If ambient humidity levels are out of the levels permitted in the data centre the unit automatically switches to indirect glycol cooling utilising the integral run-around-coil heat exchangers within the CTF80. Only in high ambient conditions will the unit operate in mechanical cooling refrigeration mode but again power usage is minimised as the variable speed compressors can precisely match cooling load to that required within the data centre.

Across all cooling modes EC speed controllable fans and floor pressure monitoring match the volume of supply air to the room loading and layout to minimise energy consumption.

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