

Fresh Air Cooling Solution For Computer Room Cuts Energy Running Costs For Hospital

Klima-Therm has delivered a high efficiency cooling solution for a computer server room at Salisbury District Hospital that uses fresh air to augment mechanical cooling.



The computer room is the nerve centre of the hospital, and vital for all aspects of its operations. It was previously cooled by two traditional CRAC units originally designed for indoor application, but installed outside and partially weatherproofed.

The system proved to be inefficient, with simple on-off operation, irrespective of the size of the load or ambient conditions. Fans were also beginning to fail due to long-term operation.

Klima-Therm's brief was to design a more energy efficient system to replace the ageing CRAC units, in order to significantly reduce energy running costs and provide reliable cooling for the servers. The hospital was also keen to have improved control and monitoring of the system, as part of its wider energy efficiency drive.

The new system consists of two vertical air handling units (AHUs) equipped with EC fans, chilled water cooling coils and a fresh air mixing box. The model ADV-B 3512-4025 AHUs are connected to high efficiency RhoSS variable speed chillers, model TCAIY 150, based on scroll compressors. The chiller-AHU combination provides 46.5kW of cooling capacity, which is augmented by fresh air cooling when ambient temperatures permit. An intelligent control system maintains temperatures at the pre-set limit, and optimises efficiency by introducing cool fresh air.

It enables up to 15per cent ambient fresh air to be introduced into the AHU airstream, reducing the load on the chillers and cutting demand for mechanical cooling.

In addition to the fresh air energy benefit, the use of variable speed scroll chillers also cuts running costs due to their high part-load efficiency. As the chiller is operating at part-load most of the time, this can result in significant savings.

In combination, the fresh air cooling and variable speed scroll chillers can deliver savings of up to 30per cent in energy running costs compared with a conventional DX CRAC system.

Space restrictions on site meant that the new vertical AHUs had to match the size of the original CRAC units, in order to allow for maintenance and inclusion of the fresh air inlet.

Jerry Henderson, Estates Project Officer at the hospital, said: "Reducing energy use is a key priority for us, and this project is part of a long-term strategy. The key is to not only reduce consumption but deliver this while maintaining and/or improving reliability, resilience and sustainability.

"We worked closely with Klima-Therm to achieve this. The dual approach, using fresh air cooling plus variable speed chillers, gives a double win in terms of reducing energy running costs. And because the design is based on proven technology, it is not only highly efficient but very reliable."

The success of the project has led to further projects for Klima-Therm at the hospital, including a HVAC solution for a new Breast Care Unit.

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