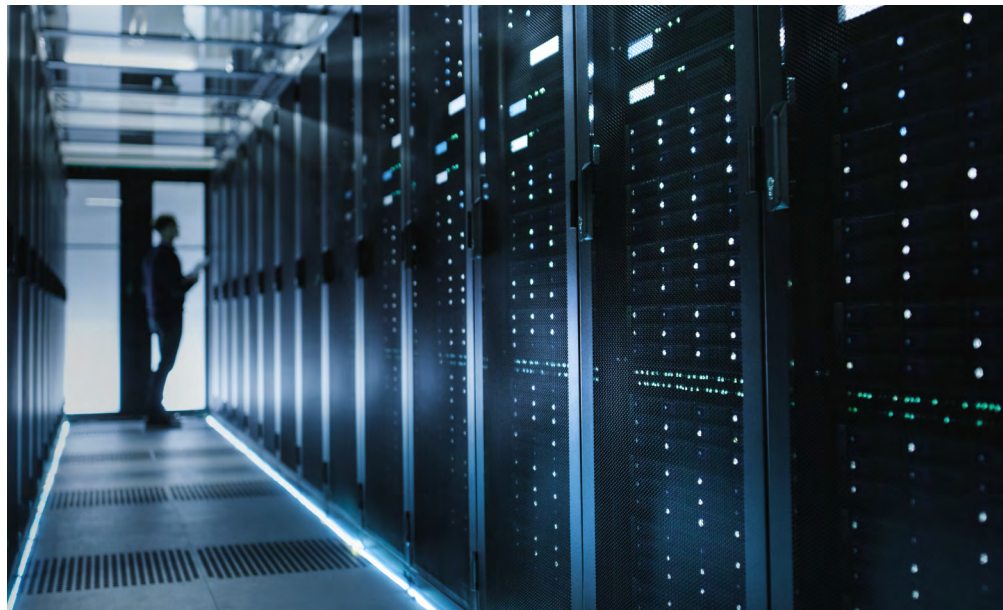


Energy Efficiency Improvements at a Data Centre – Energy Services Team, UK and Ireland



As a leading provider of turnkey energy management solutions, Johnson Controls has a proven track record in helping clients achieve significant improvements and efficiencies through a bespoke range of 'end to end' energy supply and demand services; from procurement, compliance and energy management, to project identification and implementation.

We provide tailored services and solutions to organisations operating within all industry sectors, the following paragraphs explain how we overcame a particular challenge faced by a customer operating within the data centre market.



Challenges Faced

Two chilled water circuits were providing cooling to the data centre, with each circuit supplied by three 418 kW ammonia chillers. The two chilled water circuits supply twenty four Computer Room Air Handling (CRAH) units within the data centre (i.e. 12 CRAH Units per circuit).

The CRAH units provide treated air, via a raised floor to the data hall, with the air being returned at a higher level back to the CRAH units where it is treated and then recirculated through the raised floor void to the data hall.

There is a fresh Air Handling Unit (AHU) that provides a small amount of fresh treated air into the data hall to maintain air quality.

The chilled water systems also provide cooling for the communications rooms and the Uninterrupted Power Supply (UPS) battery rooms.

Two main solutions were recommended after a full site evaluation, with additional ancillary performance enhancement with regard to airflow management and temperature controls also being included to maximise the potential savings. The main challenge was to implement these recommendations without compromising availability and the day to day operation of the European data hub.

Solution 1: Free Cooling

Supply of two dry air cooling units for the chilled water systems. This solution required the installation of two air blast cooling units to the chilled water system to provide a range of operations; from partial free cooling at 10°C outside ambient, to full free cooling at 5°C outside ambient and below. Based on local ambient conditions this system can provide over 346kW of free cooling.

In order to maximise the savings potential based on outside ambient air temperature, whilst still maintaining data centre conditions, the second element of the project involved increasing the CRAH unit's set points to a return air temp of 25°C (preferably 26°C) from their current setting of 23°C.

Solution 2: CRAH Unit Replacement

The works also included providing 'end of life' replacements for sixteen old CRAH units within the North and South service corridors. These units were replaced with Smart Cool units, which are supplied with the latest EC variable speed fans and associated controls. The replacement of the existing CRAH units also improved efficiencies, which provided additional savings once an air flow management program was implemented.



The replacement of the CRAH units also enabled further free cooling system savings, by allowing the return air and supply chilled water temperatures to increase towards 28°C as this expanded the freecooling period during the year.

Benefits & Results

- ▶ Reduction in annual maintenance costs and risk from obsolete/end of life equipment.
- ▶ A free cooling system capable of 309.9kW of free cooling at 5°C outside ambient air temperature.

Contact

At Johnson Controls we have a wealth of experience in energy-focused services and solutions for all buildings types and are fully committed to providing a premium service to our customers.

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