Case Study:
Live Data Centre Air-Conditioning Upgrades

Haringey LONDON

Sunderland City Council

GoDaddy

Workspace Technology specialises in data centre infrastructure, in particular we offer clients a wide range of data centre centric cooling solutions. With proven expertise, Workspace Technology provides clients with significant added value and advantage over non-specialist mechanical contractors, when performing Data Centre air-conditioning upgrades.

The list of live data centre AC upgrade projects is extensive and includes some extremely sensitive and important facilities for Blue Light and Ministry of Defence locations.

This case study highlights three typical projects where Workspace Technology has successfully upgraded data centres with new FläktGroup Multi-Denco equipment.

Haringey Council

Haringey Council's principle data centre had a combination of DX and Freecool air-conditioning. During summer periods it was necessary to switch over to DX cooling, however due to age, the reliability of the existing DX system was no longer compatible with the availability demands of the facility.

This project involved the replacement of five old Toscana AC systems with 4x new Multi-Denco DMA030 air-conditioning units. Part of the project also involved the construction of a brand new CCTV room. Because this data centre is located in a basement it made it particularly challenging from a logistics point of view. Workspace Technology was able to add significant value to this project on a number of key aspects including:.

- Planning of DX pipework routes to enable installation with minimal impact on the data centre operation.
- Careful positioning and orientation of condensers ensuring maximum airflow without impacting on the existing Freecool installation.
- Workspace Technology engaged a specialist lift and shift partner to transport AC units via the rear stairwell minimising disruption to the Council.
- Pre-allocation of standing areas allowed for single delivery and collection, reducing impact to the Council during works.
- Attention to detail, ensuring return air cowls were carefully resized and refitted and raised floor tiles re-cut in order to fit the new base stands.
- Detailed sequence planning to ensure backup cooling was retained for the Council at all times.
- Design of Freecool to DX handover strategy and signaling arrangements.

The project was successfully delivered on time to ensure DX back up was available for the summer period with no disruption to I.T Services. The new installation offered a significant improvement in reliability and due to the implementation of bespoke control strategies when operating the Multi-Denco system performed admirably with a PUE recorded at <1.25.

Sunderland City Council

Sunderland City Council's principle data centre had a mix and match of older end of life and newer AC systems. Airflow was very inefficient with a high proportion of short cycling combined with an ineffective AC operating strategy. Simply providing a "like for like" swap out would have failed to address inherent data centre cooling issues.

This project included a partial cooling upgrade within a live data centre along with the deployment of aisle containment and electrical infrastructure. The project needed to be completed whilst the data centre remained live.

Workspace Technology Limited

Workspace Technology specified FläktGroup Multi-Denco FVersion, also known as a Combi cool unit which incorporates a water based Freecool circuit, that can be utilised every day of the year. This allows for the direct expansion circuit to be reserved until it is required to top up the Freecool circuit. FläktGroup's Multi-Denco F-Version perimeter Computer Room.

Workspace Technology was able to add significant value to this project in order to overcome a range of challenges including:

- Addressing concerns related to the structural integrity of the raised access floor during the transportation of AC equipment through the data centre space. This was overcome with the use of spreader plates.
- Sunderland City Council was particularly concerned about maintaining temperatures whilst AC units were being replaced. Workspace Technology addressed these concerns in a number of ways including: partially installing new aisle containment, installing temperature monitoring, performing AC testing and checking of cold aisle temperatures before and during works.
- The limited compound space meant careful planning and sequencing was required to allow for installation and removal of condensers.
- Following the installation of the last AC System Workspace Technology performed an "Optimisation" exercise to ensure the most efficient configuration settings were selected to suit the existing I.T load.

Workspace Technology's data centre expertise significantly benefited the Council by reducing project risk and ensuring maximum ongoing energy efficiency. Following installation ongoing energy costs of the data centre were reduced by over £200K per year providing a payback of less than two and half years for the complete replacement cooling technology and associated aisle containment.

Go-Daddy

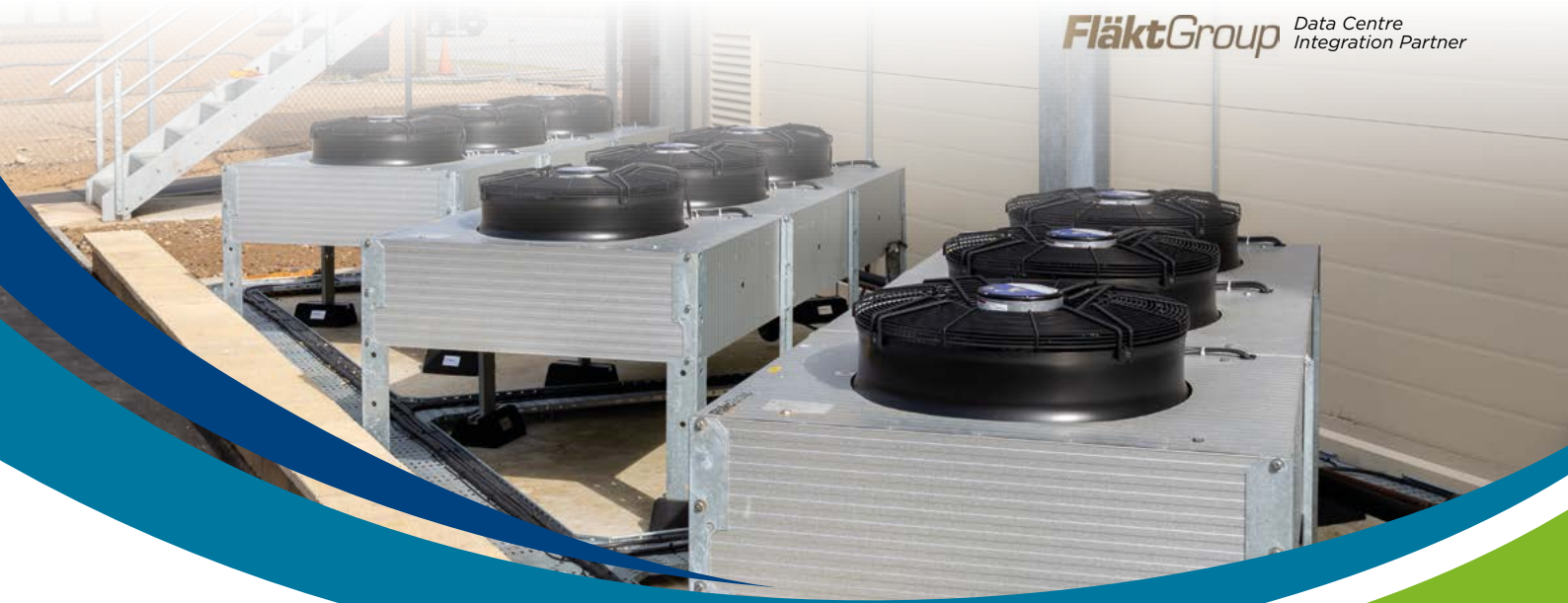
GoDaddy's UK data centre was configured with nine aging perimeter CRAC units which were unable to sustain sufficient data centre cooling during the summer months. Overcrowding within the compound area resulted in air starvation to condensers further adding to the problems. The system became unreliable and permanent temporary cooling was hired and deployed to keep the data centre operational as AC systems continually failed. The GoDaddy data centre supported many thousands of client' servers making it critical to ensure cooling was maintained throughout the AC upgrade.

Advantages that WorkspaceTechnology provided GoDaddy include:

- Production & development of detailed drawings to allow careful space and sequencing planning of works for both indoor and outdoor units.
- Workspace Technology were able to perform advanced preinstallation power usage calculations using manufacturers data to clearly demonstrate the payback. These calculations clearly demonstrated the viability of the project and enabled budgets to be sign off with confidence at European level.
- Workspace Technology's extensive product knowledge helped ensure the optimum CRAC selection based on current and future predicted I.T loads.
- Our knowledge of aisle containment and airflow management systems eliminated the need to oversize replacement AC systems by incorporating a range of improvements such a blanking panels and floor grommets.

Workspace Technology's data centre expertise significantly benefited GoDaddy throughout the pre-project budgeting, preinstallation design and final installation with "Optimised" configuration allowing GoDaddy to benefit from maximum operating efficiency leading to a reduced payback period of <3 Years.

FläktGroup *Data Centre Integration Partner*



Interested in finding out more?

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Workspace Technology Limited