Case Study:

Leicester City Council Deploys New Sub 1.15 PUE Data Centre Infrastructure Designed and Installed by Workspace Technology

Leicester City Council

Leicester City Council is a unitary authority responsible for local government in the East Midlands city of Leicester. As an unitary authority, the Council is responsible for running the majority of local services in Leicester and with a population of over 330,000, the highest in the region, Leicester is ranked as the tenth largest city in the UK.

The Challenge

Leicester City Council's legacy data centre was located in the New Walk Centre, an obsolete 1960's concrete building which was condemned and due for demolition during 2014. The Council identified an out-of-use training facility within the city boundary to provide shared resource services for local public sector organisations in the wider Leicestershire and Nottinghamshire areas.

The Council's ambition was to create a data centre of excellence, combined with exceptional energy performance to help provide a significant and meaningful contribution to the Council's carbon reduction commitments. They wished to deliver direct fresh air cooling with a closed loop backup to mitigate any local air quality issues. Not only was an annulaised PUE of sub 1.15 demanded, but so was the implementation of renewable energy technology and the utilisation of waste heat.

The Solution

Data Centre Solutions

Workspace Technology's Freecool® Evaporative Free Air Cooling was the technology of choice and the only technology on the market that could fulfil the PUE design requirements of the Council. The solution was designed to support a maximum critical load of 250kW N+1 with a deployment of 9 x 30kW Freecool® units.

A Cool Wall module was implemented which consists of a series of high efficiency chilled water coils, positioned within the Freecool® Mixing Box, combined with an external mechanical cooler and buffer tank. The Cool Wall module is designed to deliver the data centre with an independent back-up cooling circuit.

FlexAisle® was deployed as part of the managed airflow architecture and to help maximise temperature control and minimise fan energy consumption. A combined cold and hot aisle return plenum 'HARP' system was implemented enabling the simple installation and removal of equipment racks without the need to dismantle aisle containment systems.

A complete end-to-end electrical installation including HV power feeds, transformers LV switchgear, critical and mechanical power distribution was deployed. InRow Critical PDUs incorporating Schneider Electric Acti9 sub pan assemblies mounted within APC Netshelter SX racks provided the perfect configuration for overhead power distribution. Schneider Electric PM750 meters were deployed throughout enabling power monitoring through the StruxureWare Power Management Expert energy management software.

The Benefits

The new data centre has been created with 'built in future proofing' allowing further growth to support the Council's ambition to develop a local public sector shared resources I.T facility over the forthcoming years.

Photovoltaic (PV) technology delivering up to 35kW of power was installed as part of the project.

Workspace Technology Limited

The PV based kWh power contribution exceeds that of the Freecool® kWh power consumption. As a direct result, the Council's data centre facility can truly describe it's cooling as carbon neutral. This is one of the first of its kind in the UK and it is hoped that this model will act as the template for future data centre deployments.

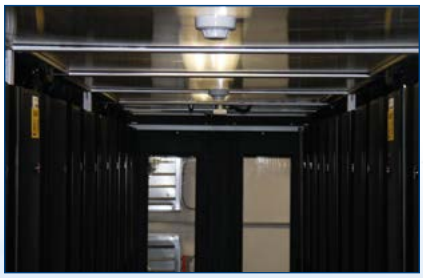
Workspace Technology took energy efficiency one step further by using waste heat from the UPS room to maintain the temperature for the battery room during cooler periods thus eliminating the need for mechanical heating. As a result of the eco-friendly design a sub PUE of 1.15 was achieved for the data centre project.

"Workspace Technology's bid was outstanding, without a doubt they clearly demonstrated their understanding of the Council's needs and it was obvious that Workspace Technology have unrivaled extensive knowledge and expertise in low carbon data centre design ".

Spokesperson for
Leicester City Council

Freecool® Benefits

- **Energy Efficiency** – Designed to deliver PUE performance figures of less than 1.15.
- **Dual Filtration** - The combination of G3 and G4 air intake filtration systems are designed to eliminate potential contamination.
- **Atemperature™ System** - Accurately mixes a percentage of hot exit air with cold intake air to produce a stable equipment intake temperature irrespective of external ambient conditions.
- **Dynamic Mode Temperature Control** - Being in 'dynamic' mode allows cold aisle temperatures of 18°C for the vast majority of the operating period without any compromise in energy efficiency.



- **Reduced Fan Power** - Using carefully selected energy efficient EC fans use significantly less energy than conventional fan technology.

freecool®

APC by Schneider Electric

Schneider Electric

Project Awards

DatacenterDynamics AWARDS EMEA 2014 WINNER

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NETWORK computing AWARDS 2015 FINALIST

Public Sector Sustainability Awards 2014

Interested in finding out more?

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