

Data Centre Solutions...energy efficient by design



# Free Cooling Case Study

THE UNIVERSITY OF  
WARWICK



University of Warwick Reduces Data  
Centre Operating Costs by the  
deployment of Evaporative Free Cooling  
Technology



Creating an effective workspace environment



# THE UNIVERSITY OF WARWICK

## University of Warwick Reduces Data Centre Operating Costs by the deployment of Evaporative Free Cooling Technology

Warwick is one of the UK's leading universities, with an acknowledged reputation for excellence in research and teaching, for innovation, and for links with business and industry. Employing nearly 5000 staff and supporting over 22,000 students the University of Warwick is one of the largest education establishments in the UK.

### Client Situation

As part of the University of Warwick's strategy to reduce overall campus energy consumption, evaporative fresh air cooling systems were considered as greener alternative to tradition DX condenser based air conditioning systems.

Following a successful pilot in a small communications room the decision was made by the University Energy Manager to replace aging DX technology in a number of laboratory, plant and communication rooms and also within the existing data centre facility.

Workspace Technology were able to offer the University a complete turnkey design and build solution based on its innovative evaporative FreeCool® system.

### University House Data Centre

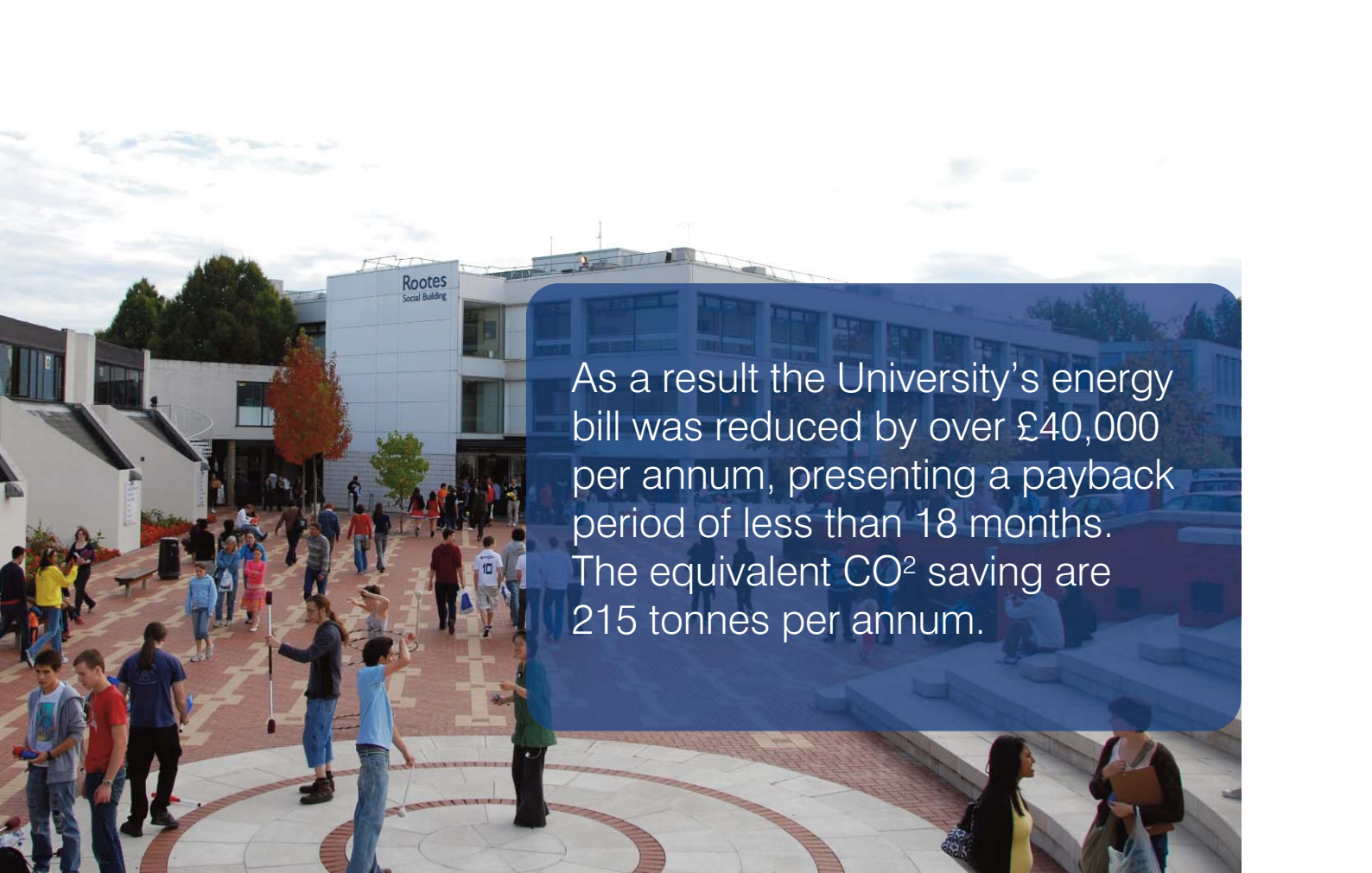
The University data centre consisted of 40 equipment racks laid out in a four aisle configuration with two cold and three hot. The data centre cooling consisted of a series of ceiling mounted air conditioning cassettes combined with additional "temporary" chilled water cooling through portable air handling units. The total power consumption for the cooling was in excess of 50kW.

Due to the rack arrangement the deployment of fresh air free cooling within the data centre presented a considerable challenge. Workspace Technology's project team designed a custom ducting arrangement which directed cool air to the "cold aisles" and extracted warm air from the "hot aisles". The ducting configuration allowed for hot air recirculation to reheat cold air during cooler periods using the unique atemperation system with 0-10V operated motorised dampers. Workspace Technology deployed four 30kW FreeCool® units providing a total cooling capacity of 120kW.

Following commissioning of the FreeCool® evaporative air cooled system the existing air conditioning was switched off. The resulting energy savings were significant. Total mechanical cooling power was reduced from 50 to less than 4kW contributing to 46kW power savings.



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As a result the University's energy bill was reduced by over £40,000 per annum, presenting a payback period of less than 18 months. The equivalent CO<sup>2</sup> saving are 215 tonnes per annum.

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Steve Silver the University of Warwick's I.T Services Infrastructure Manager commented "I was very pleased with the level of detail and the installation quality undertaken by the Workspace Technology team. The deployment of Workspace Technology's FreeCool<sup>®</sup> system has delivered a significant contribution to the University's target to reduce campus energy consumption."

### Additional Buildings

Further FreeCool<sup>®</sup> systems were also deployed in two UPS rooms to help maintain battery temperature and also within the Mathematics and Statistics Laboratory. The new FreeCool<sup>®</sup> units replaced existing mechanical cooling systems.

### Complete Design & Build

As a specialist Data Centre Design, Build and Management company, Workspace Technology were able to deliver a complete installation service inclusive of all ducting, mechanical systems, building, and electrical installation works.

PLC controllers were integrated into each room to provide full system control based on air intake and extract temperature and pressure readings. The system can be configured with traditional Modbus or 10/100 LAN interface cards for remote control. External alarm signals enable the existing AC systems to be switched on in the event of a system failure.

Following successful system commissioning the data centre PUE\* was measured at 1.15 which is an exceptional figure.

This case study demonstrates the versatility of Workspace Technology's FreeCool<sup>®</sup> system and we are proud of our ability to deliver industry leading data centre energy efficiency.

\* Power Usage Effectiveness is the industry recognised standard for data centre room efficiency measurement introduced by the Green Grid.



## Energy Efficient Cooling Technology Overview

Workspace Technology's unique FreeCool® evaporative free air cooling system makes the use of external air to cool server room and data centre equipment. Unlike simple air economizers which require supplemental DX or chilled water cooling when external ambient temperatures exceed 21°C, the FreeCool® system engages the evaporative cooling mechanism which reduces external air temperature by simply passing the airflow through wet filter pads.

Workspace Technology's FreeCool® evaporative free air economizer technology delivers consistent equipment inlet temperatures of 21°C to 24°C depending on client preferences. The dew point temperatures are no longer an issue due to the practical working temperatures.

FreeCool® can use as little as 10% of the energy required for traditional air conditioning units substantially reducing operational costs associated with cooling.

## FreeCool® Installation Benefits

FreeCool® deployment benefits include:-

- **Reduced CO<sup>2</sup> emissions**
- **Significantly reduced energy consumption and operating costs**
- **Supports existing cooling technologies**
- **Improved DCiE / PUE\*\* Efficiency Ratings**
- **Improved company "Green Credentials"**
- **Improved resilience with practical support by UPS systems**

Full details on our FreeCool® system can be found on our website [www.workspace-technology.com](http://www.workspace-technology.com).

\*\*Data Centre Infrastructure Efficiency / Power Usage Efficiency are industry recognized standards for data centre room efficiency measurement introduced by the Green Grid



# About Workspace Technology

**The value that Workspace Technology can deliver to the customer experience is our complete understanding of the infrastructure solutions market, its products and services. By engaging with you and taking the time to understand your business and performance related issues, Workspace Technology is able to effectively address the demands of your business.**

Workspace Technology welcomes this opportunity to connect with you as a valued customer. We would like to share our vision and expertise through a partnership approach. Our ability to deliver integrated, scalable, energy efficient solutions has made us the preferred choice for many public sector and commercial businesses today.

Operating throughout the UK, Workspace Technology offers clients an enthusiastic and refreshing approach, combined with teamwork that takes performance and service to new levels of excellence.

Further details of Workspace Technology's products and services can be found at [www.workspace-technology.com](http://www.workspace-technology.com).



Approved "Endorser" EU "Code of Conduct on Data Centre Efficiency"



APC Elite Partner  
Data Centre Certified



Workspace Technology's "Commitment to help clients reduce their carbon footprint through the deployment of energy efficient technology and design".

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