

Data centre solutions - energy efficient by design



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





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It is widely recognised that with the trend for increased consumption by I.T hardware, data centres are increasingly becoming major contributors to carbon emissions within the UK economy.

Energy efficiency is imperative to environmental and IT economic productivity and can no longer be ignored. Slowing the growth rate of electric power use for servers and data centres is necessary to reduce the rate of growth of greenhouse gas emissions.

The intelligent application of EcoDesign™ solutions and services by Workspace Technology will deliver a measurable reduction in the power consumption for any data centre infrastructure.

EcoDesign™ is based on the implementation of a set of “common sense” design principles which when deployed intelligently contribute significantly to the energy efficiency and performance of a data centre.

Principles of EcoDesign™

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Measurement	Without measurement it can be hard to understand why and where energy performance is poor and how it can be improved. It is a recommendation of the Carbon Trust that sub metering of high energy consumption infrastructure is implemented.
“Right Size” Architecture	Modular, scalable power and cooling architecture that allows deployment as needed. This is the crucial element for improving data centre efficiency.
Efficient Cooling Technology	<p>The implementation of modern energy efficient cooling technologies reduce operational energy overhead.</p> <p>The configuration of AC system set points more appropriate to modern computer technology, will have a surprising contribution to data centre energy savings.</p>
Clear Segregated Airflow	Ensuring a clear airflow path whilst eliminating the mixing of hot and cold air through the deployment of appropriate ducting, aisle containment and airflow management technology will contribute to significant reductions in the energy demand of the cooling system.
Efficient Room Layout	An efficient room layout will facilitate the deployment of appropriate cooling, allow for a modular growth strategy and assist airflow separation. Correctly positioned grille tiles will ensure airflow to equipment inlet positions.
Efficient UPS & Electrical Installation	<p>The installation of modern modular transformerless UPS technology significantly improves efficiency and also saves on floor space at typical operating loads.</p> <p>The installation of well designed power paths combined with energy efficient lighting reduces energy consumption.</p>

This brochure focuses on three products and services within Workspace Technology’s EcoDesign™ commitment for data centre energy reduction.





freecool®

For data centre free air cooling technology where exceptional levels of energy efficiency are demanded, Workspace Technology recommends the deployment of FreeCool®.

FreeCool® Evaporative Free Air Cooling is a low cost, low carbon alternative to traditional DX or chilled water cooling solutions for server room and data centre environments.

FreeCool® can be installed as new, or retrofitted within existing data centres, fitting in with current hot and cold aisle configurations. This solution will deliver <8Kw per rack when combined with FlexAisle® aisle containment and airflow management systems.

Traditionally the percentage of energy costs associated with cooling data centres is high. The deployment of FreeCool® delivers significant energy reductions for data centre and server room cooling. The operating costs of Workspace Technology's FreeCool® evaporative free air cooling solutions are up to 90% less than other traditional air conditioning technologies.

FreeCool® Installation Benefits

FreeCool® evaporative free air cooling technology makes the use of external air to cool server room and data centre equipment. 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.

FreeCool® deployment benefits include:-

- **Reduced CO² emissions**
- **Significantly reduced energy consumption and operating costs**
- **Support for existing cooling technologies**
- **Improved DCiE / PUE ** Efficiency Ratings**
- **Improved "Green Credentials"**
- **Improved resilience with practical support by UPS systems**
- **Flexible airflow configuration options**

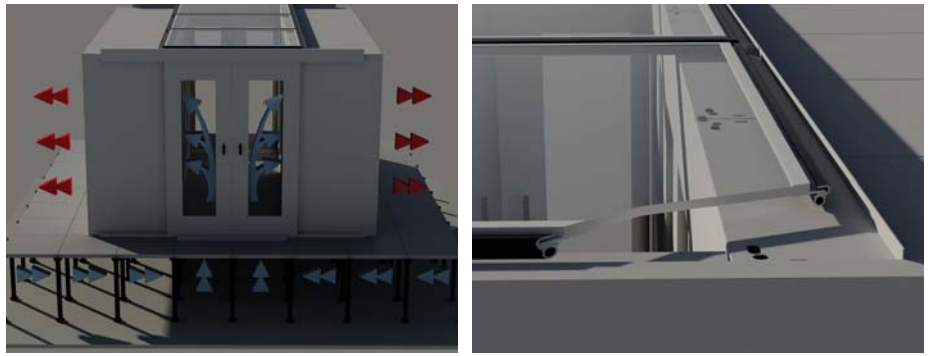
* ASHREA - American Society for Heating, Refrigeration and Air-Conditioning.

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





FlexAisle® is an aisle based vendor independent flexible Data Centre airflow containment solution by Workspace Technology Ltd



FlexAisle® provides a simple and cost effective passive method for eliminating the mixing of hot and cold airflows within a data centre or server room environment. The goal of FlexAisle® is to maximise the performance, uptime and life expectancy whilst reducing operating costs.

FlexAisle® can be installed as new, or retrofitted within existing data centre and server room environments. FlexAisle® is a non intrusive easy fit solution which provides data centre managers with the ability to re-organise and expand facilities in line with business requirements.

FlexAisle® uniquely provides the ability to support multiple cooling configurations and is independent of cabinet vendors. This enables data centre managers to support a mix and match of server and communication rack systems.

FlexAisle® Configuration Options

Data centre managers are faced with the continued trend of increasing cabinet heat densities combined with a multitude of options for cooling, with each having unique airflow characteristics.

FlexAisle® is a flexible vendor neutral airflow containment system that can be configured to match individual data centre cooling and physical room characteristics.

Cold Aisle Corridor

Classic configuration for data centres with raised access floors and perimeter down flow cooling solutions.

Hot Aisle Containment

Suitable for aisle based In-Row cooling technology.

Hot Aisle Return Plenum

Delivers maximum flexibility supporting a range of multi-cooling technology options.

FlexAisle® Installation Benefits

The deployment of FlexAisle® will have an immediate and positive impact on any server room or data centre facility.

The core function of FlexAisle® is to eliminate the mixing of hot and cold air flows to provide better control of equipment inlet temperatures. This in turn enables cooling system temperature set points to be increased (thereby saving energy) whilst still supplying the load within recommended ASHREA* operating temperatures.

FlexAisle® deployment benefits include:-

- Eliminates air recirculation
- Reduced CO₂ emissions
- Reduced AC energy consumption and operating costs
- Improved DCiE / PUE ** Room Ratings
- Improved company "Green Credentials"
- Increased air-conditioning cooling capacity
- Improved "inlet" temperature control
- Reduced down time of server equipment
- Reduction of humidification / dehumidification costs
- Flexible airflow configuration options.

FlexAisle Summary Configuration Options

FlexAisle® Configuration	Perimeter Downflow Cooling	In-Row Cooling	Rear Rack Cooling	Self Contained Rack Cooling	Room Airflow Exchange
Cold Aisle Corridor (CAC)	Yes	No	No	Yes	No
Hot Aisle Containment (HAC)	No	Yes	Yes	Yes	Yes
Hot Aisle Return Plenum (HARP)	Yes	Yes	Yes	Yes	Yes





EcoMeasure™ - Scalable Data Centre Energy Management & Efficiency Measurement Solution by Workspace Technology Ltd

EcoMeasure™ is a service which enables data centre and server room managers to accurately measure the performance and energy consumption of any data centre facility.

EcoMeasure™ can be installed in new or retrofitted within existing data centre and server room environments.

The system provides data centre managers with direct information on power and energy consumption and accurate benchmarking of energy efficiency.

Benefits of EcoMeasure™ Deployment

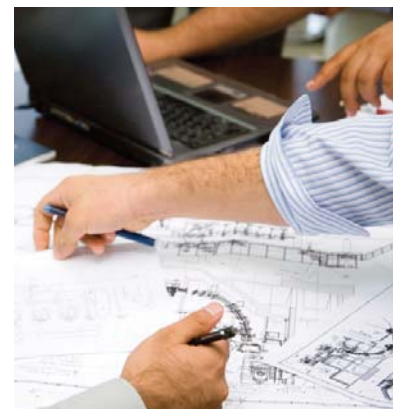
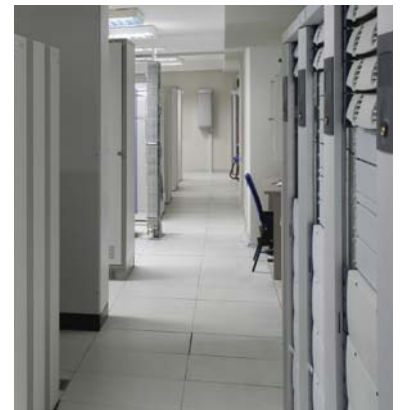
Metering the total energy used at a site is important, but it does not show how energy consumption is being used across an area or for a specific function e.g. a data centre facility. Without measurement it can be hard to understand why and where energy performance is poor and how to improve it. It

is a recommendation of the Carbon Trust that sub metering of high energy consumption infrastructure is implemented.

The installation of a sub-meter within a server room on its own does not help to fully identify the efficiency of the facility.

EcoMeasure™ is a solution which enables I.T and data centre managers to accurately benchmark the Power Usage Effectiveness (PUE), Data Centre Infrastructure Efficiency (DCiE) and usage of the server room environment through direct analysis of power and energy consumption.

EcoMeasure™ is invaluable for both government and commercial organisations which need to track costs associated with server room and data centre environments and to demonstrate CO² emission savings when investments are made in either infrastructure or technology.



EcoMeasure™ deployment benefits include:-

- Assists in reducing energy consumption, minimising environmental and economic impacts associated with excessive energy use
- Scalable configurations to suit individual data centre and server room topologies whatever the size and complexity of the power distribution
- Instant confirmation of data centre DCiE / PUE efficiency ratings
- Accurate proof of the effectiveness of any "claimed" energy efficiency deployments throughout the life of the facility
- Measurement of energy consumption, critical load trends, power quality and response time of emergency power plant
- Ensure utility bills are correct
- Opportunities to improve a server room or data centres operational efficiency
- Shows how a server room or data centre compares to other internal or competitive facilities.





Making the difference Connecting with our clients

Workspace Technology's Data Centre Solutions division offer clients Data Centre, Server and Communications Room solutions and services which are "Energy Efficient by Design". By engaging you and taking the time to understand the 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.

Our commitment to reduce energy consumption within the data centre environment is fundamental to our business strategy and is the foundation of our success.

Further details of Workspace Technology's products and services can be found at www.workspace-technology.com.



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



APC Elite Partner
Data Centre Certified



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Creating an effective workspace environment

Workspace Technology Limited

Technology House, 5 Emmanuel Court, Reddicroft,
Sutton Coldfield, West Midlands B72 1TJ.

Tel : 0121 354 4894 Fax : 0121 354 6447
email : sales@workspace-technology.com
www.workspace-technology.com