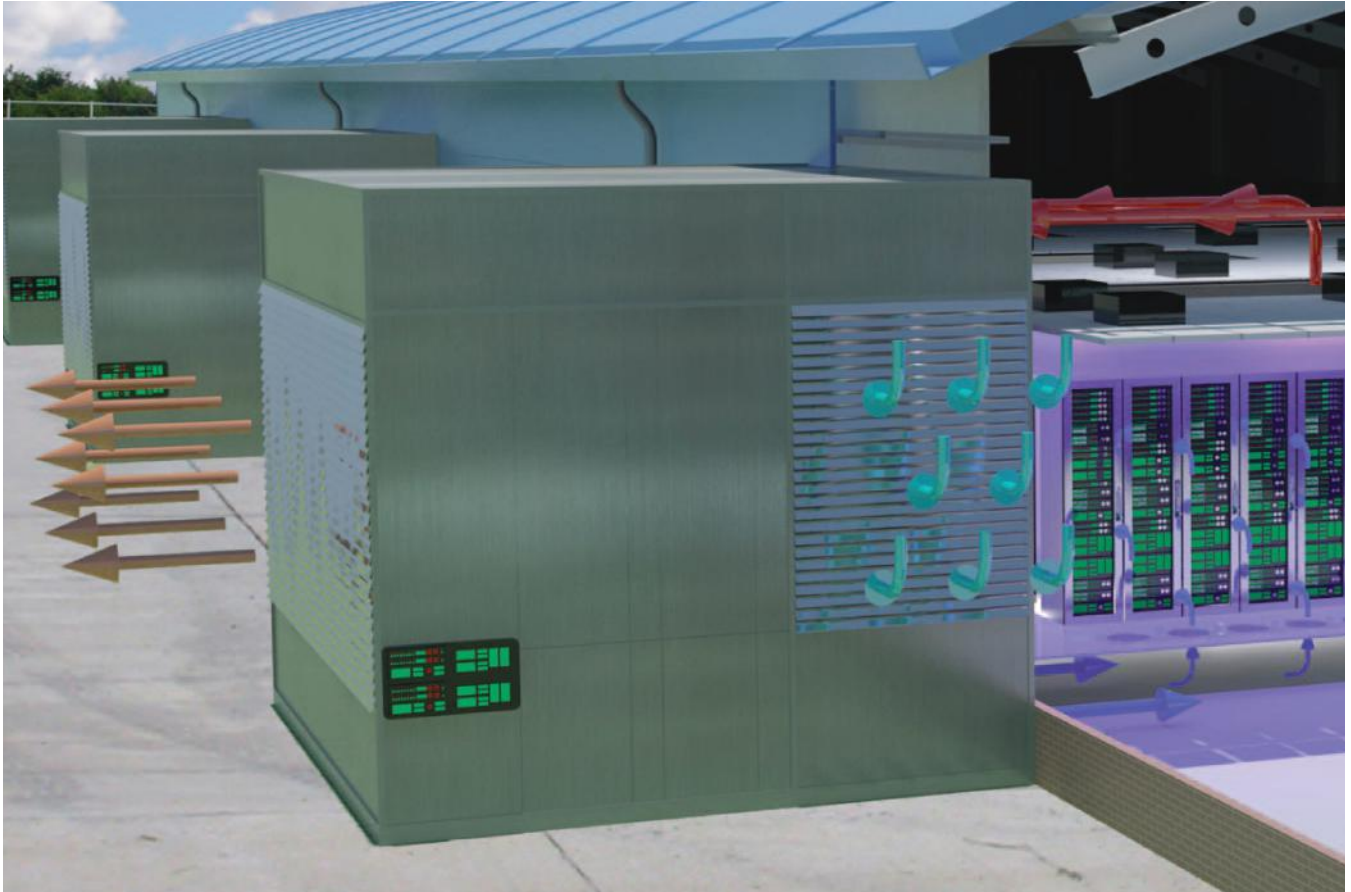




**Excool**  
Indirect Adiabatic and Evaporative Data  
Centre Cooling





## Indirect Adiabatic and Evaporative Data Centre Cooling Solutions by Workspace Technology

Freecool® Evaporative Free Air Cooling by Workspace Technology delivers innovative low energy cooling for a range of applications including data centre environments. Freecool® offers clients a choice of direct and indirect airflow configurations.

As part of Workspace Technology's commitment to ensure maximum client choice we are pleased to exclusively\* offer Excool the world's leading indirect adiabatic and evaporative data centre cooling technology as part of our Freecool® solutions strategy.

Workspace Technology is a natural partner for Excool, building on our established expertise with direct free air cooling technology we are able to effectively integrate Excool products seamlessly as part of design and build data centre projects.

\*Workspace Technology are exclusively appointed UK Systems Integrator by Excool focused on the design and build data centre market sector.

Excool is the most efficient indirect economiser in the world designed specifically for data centre applications.

Outdoor air is used to indirectly cool the data centre airflow through a series of heat exchangers enabling cooling to take place without outdoor air entering the data hall.



Excool's heat exchange technology avoids potential air pollution hazards such as smoke and salt within the mission critical space. Through the use of specially designed adiabatic sprays the Excool system will maintain data centre internal temperatures of 24°C with external ambient temperatures in excess of 35°C when combined with aisle containment technology.

Through a combination of effective airflow control, high efficiency heat transfer, adiabatic cooling, Workspace Technology are able to integrate the Excool system without the need for mechanical cooling. Excool will deliver part PUE starting from 1.02. When Excool is deployed as part of an overall balanced data centre solution Workspace Technology is able to offer annualised PUE<sub>3</sub> of <1.15.

Workspace Technology offers Excool as part of a new data centre or can be deployed as replacement cooling technology. Excool can supporting rack densities ranging from 1kW to 20kW. Excool forms part of Workspace Technology Freecool® range of technology which is growing in popularity and has become the preferred cooling technology for many public sector and corporate organisations.

#### **Excool deployment benefits include:**

- Reduced CO<sub>2</sub> Emissions
- Significant Reduction of Energy Consumption and Operating Costs
- Elimination of Data Centre Contamination
- Industry Leading PUE \* Energy Performance
- Improved Resilience Through Optional Support via UPS Systems
- Sustainable Product Assisting Clients to Gain CEEDA / EU Code of Conduct Accreditation

### **System Operation...** **Air-to-air heat exchange technology**

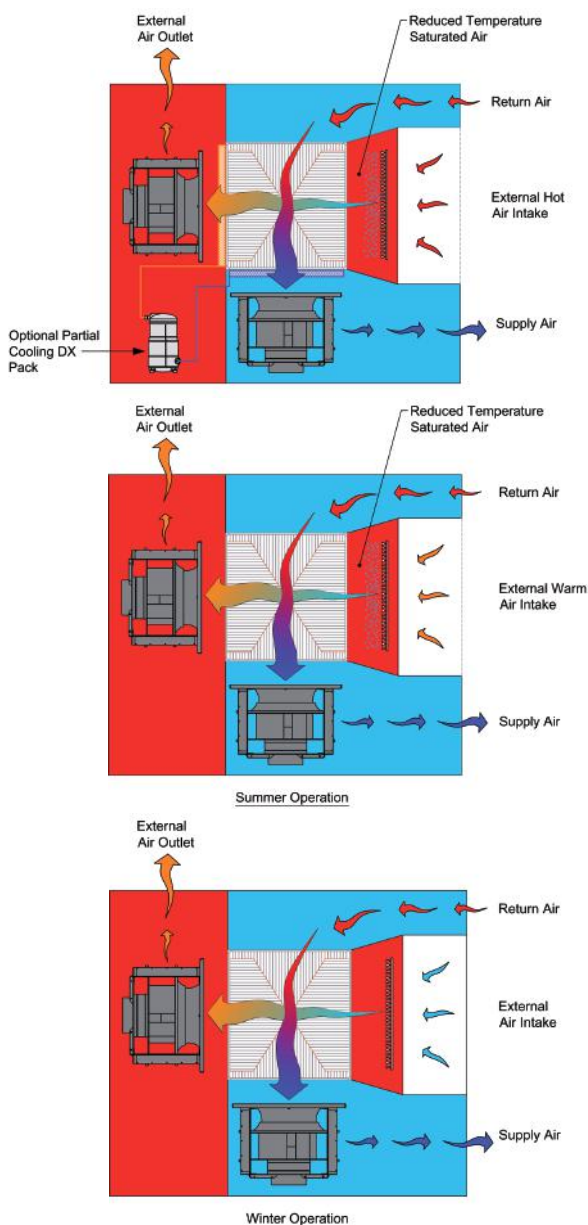
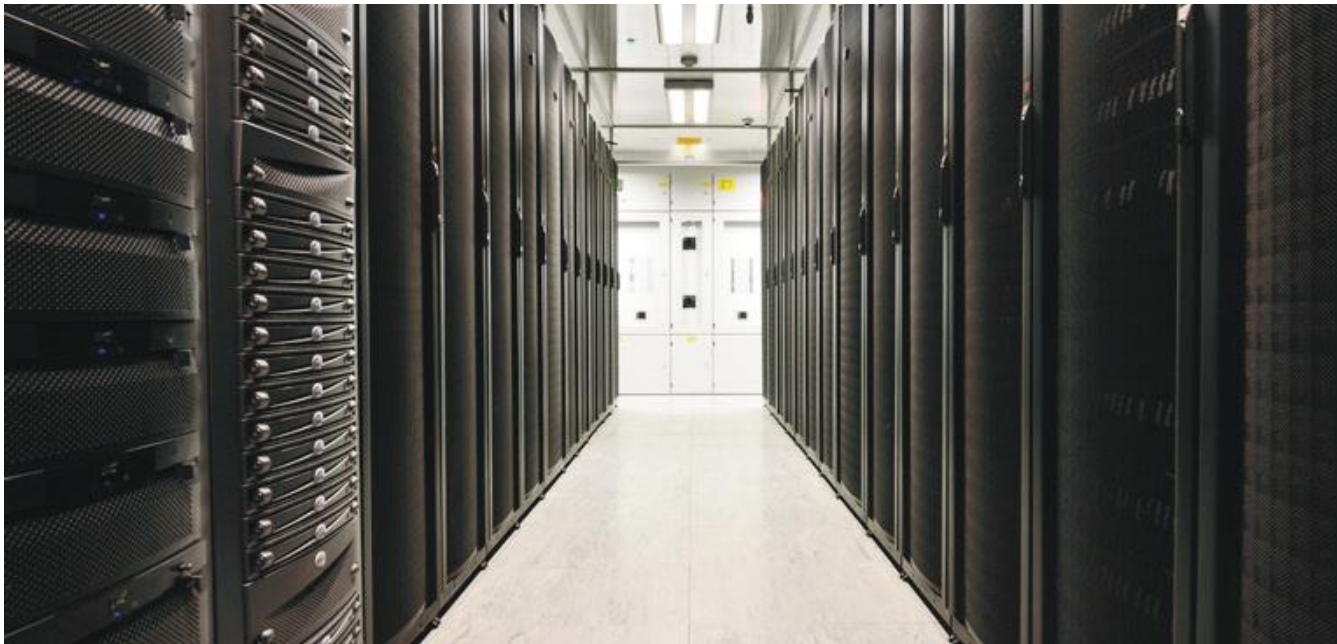
Air-to-air heat exchanger technology has been used in heat recovery devices for many years. Excool have optimised this technology specifically for the application of adiabatic and evaporative cooling in data centres.

The Excool heat exchanger is manufactured from a composite material which unlike the more commonly used aluminium, makes it resistant to corrosion, more robust and leak tight.

With 50kW, 80kW, 120kW, 160kW & 200kW chassis the Excool system scales to support a wide range of data centre capacities.

The bespoke adiabatic technology has been developed especially for Excool. It is highly efficient minimising water consumption. The data centre supply air temperature is controlled by a combination of internal aisle containment, outdoor air temperature, fan speed and adiabatic pump speed.

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



## Modes of Operation

### Winter Mode

Hot return air from the data hall is drawn through the heat exchanger by energy efficient EC plug fans. Cool outdoor air is drawn through a second air path in the heat exchanger by a set of independently controlled fans.

In turn the data centre supply air temperature is dynamically controlled by a combination of the winter optimisation air flow dampers and outdoor air fan speed.

### Summer Operation

Moisture is added to the hot outdoor air which has the effect of lowering the dry bulb temperature through the adiabatic process. A typical UK peak summer day may have a dry bulb of 35°C with a wet bulb temperature of 21°C. By fully saturating the air the dry bulb temperature can be reduced to 21°C. This reduced temperature air is then used as a cooling medium. This enables AHRAE Class A1 – A4 temperatures to be maintained throughout the year.

### Optional Top-up Module

In more challenging environments it may be necessary to 'top-up' the cooling capacity with a partial DX or chilled water supplementary cooling section.

The integrated top-up modules are designed to complement the heat exchangers during extreme summer conditions. These top up systems are sized as a small percentage of the overall cooling capacity of the Excool module.



## Design & Innovation... expert data centre design & build

Excool adiabatic and evaporative cooling systems when deployed as part of complete integrated data centre solution, by Workspace Technology, can offer data centre operators exceptional levels of energy efficiency helping reduce overall capital and operational expenditure.

As a data centre design and build expert you can be assured that Workspace Technology will create innovative Excool solutions to support your individual needs. Our designs can be tailored to existing data centre infrastructure or they can form part of a brand new data centre design. Typically an Excool installation will combine with aisle containment and airflow management technology in order to maximise overall system energy efficiency. Our aim at Workspace Technology is to ensure Excool deployments will deliver industry leading (sub 1.15 annualised) PUE performance for our clients.

### Water Consumption

Typical water consumption for a 1MW load in the South East of England would be below 1000m<sup>3</sup> per annum. This equates to the average domestic use of 20 people.

### Water Treatment

The Excool system is supplied complete with on board water treatment. The Excool units have an automatic drain down and purge cycle ensuring all areas of potential bacterial growth are removed. Overspray is collected and drained when in evaporative cooling mode. The system also employs cartridge based biological filters and scale inhibiting systems.

### High Quality Construction

Excool systems are manufactured in the UK from high quality components and materials to ensure long term reliability and resistance to corrosion. Framework and support structures are stainless steel, panels are manufactured from a composite of PVC and aluminium and system pumps use robust stainless steel internal components for long life.

### Reduced Fan Power

Excool air movement is achieved using high efficiency EC plug fan because they use significantly less energy than conventional fan technology. EC technology allows continuous adjustment of fan speeds as required to support data centre cooling demands. The speed of each fan within the Excool system is individually modulated via the control systems.



**Data Centre Solutions Expertly Engineered**

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