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## **TROX AITCS LAUNCHES PIONEERING CO<sub>2</sub>-BASED DEALER DESK COOLING**

TROX AITCS has launched CO<sub>2</sub>OLdesk, a powerful carbon dioxide-based cooling system that can counteract the escalating heat loads produced by PCs in dealer desks on the trading floors of financial institutions.

CO<sub>2</sub>OLdesk is integrated within the raised floor directly beneath the desks. The insulated desk chamber creates a micro climate so that all of the PC heat is absorbed by CO<sub>2</sub>OLdesk. The unit is fully compatible with all types of desks.

It offers massive advantages including huge energy savings of up to 30% over chilled water alternatives. The energy saving results in reduced carbon emissions at the power station and in so doing reduces the carbon footprint of the building.

Guy Hutchins, sales director of TROX AITCS, says: "This is a positive use of CO<sub>2</sub>, a bi-product of industrial processes, which could otherwise threaten the environment."

CO<sub>2</sub>OLdesk, which is supplied with liquid carbon dioxide at 14°C, draws the PC's rejected heat across a heat exchanger and fully absorbs the PC load, enabling the equipment to remain at its design temperature with no impact on the traders. Laboratory tests prove user comfort is improved with CO<sub>2</sub>OLdesk since it can reduce air temperatures from an intolerable 30°C to a very comfortable 22°C.

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Independent studies have proven a direct link between user comfort and their performance in the work place; this could have enormous benefits for an investment bank.

Unlike chilled water CO<sub>2</sub> is electrically benign and does not present a risk to PC equipment or under-floor cabling.

Mr Hutchins adds: “The use of CO<sub>2</sub>, which has more than seven times the heat capacity of chilled water, enables an extremely slim-line construction that would not be possible with chilled water, thereby allowing its use with very shallow floor voids. This is extremely valuable to investment banks, which, thanks to CO<sub>2</sub>OLdesk, have the flexibility to locate trading in almost any low height structure.”

The compactly designed CO<sub>2</sub>OLdesk will facilitate higher density desks, computing and therefore trading per square metre of floor area. The higher density solution will effectively offer investment banks a 'competitive advantage'. Its compact design allows integration within the desk immediately adjacent to the heat source where it performs more effectively and efficiently.

Mr Hutchins again: “CO<sub>2</sub>OLdesk absorbs the heat load where it occurs along a 'desk run', which allows a holistic approach to PC deployment; no longer rigidly constraining the user to a predetermined PC quantity or load per individual desk.” The system is self balancing and load driven, and owing to the CO<sub>2</sub> overfeed can even successfully cool equipment loads above the stated capacity for the unit, making it suitable for the random introduction of a higher concentration of PC's.”

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There are three types of unit in the CO<sub>2</sub>OL desk range:

- The 200mm deep recessed unit replaces 600mm wide floor tiles and finishes flush with the floor level. The unit has a cooling capacity of 1500W and with its internal baffle plates and multi-deck fans can accommodate PC's arranged in either a single or two way formation.
- The 150mm deep unit sits partially within and above the floor. The unit has a cooling capacity of 1200W and is designed to suit PC's arranged in a 1-way formation.
- The 120mm deep unit is designed to fit directly on to the raised floor. It is ideally suited to retro-fit applications as the desks can remain in place during installation. The unit has a cooling capacity of 1200W.

All three systems use stainless steel heat exchangers in order to satisfy the highest levels of their robustness and resilience.

For built-in redundancy, each unit contains two power supplies and two fans. If one fan fails the other has the capacity to provide 75 per cent of the load, which should satisfy most situations when load diversity is considered. The unit has been designed to enable the maintenance team to replace faulty fans, normally out of hours, within a 15 minute cycle.

But this is not the only advantage to the maintenance team, as Mr Hutchins explains:

“We have also incorporated a BMS and LED alarm for fan failure so that, should any of the fans go down, a volt free signal is sent to the maintenance team via the BMS. The desk mounted LEDs make it easy for the maintenance team to identify problem desks.

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“Finally, there is a thermocouple monitoring the temperature in the last chamber in a run. Since the units are mounted in series and there are no balancing valves, if the temperature within this chamber exceeds design temperature, the maintenance team will be alerted to potential problems – it effectively provides them with an early warning system and management tool to ensure that PC deployment and desk cooling are in total harmony.”

CO<sub>2</sub>OLdesk is a development of the already established and successful multi-award winning CO<sub>2</sub>OLrac blade server CO<sub>2</sub>-based cooling system. TROX AITCS has won six awards in the last 12 months for CO<sub>2</sub>OLrac, which is already installed in several buildings including Imperial College, London, and ABN AMRO’s offices at 250 Bishopsgate in London.

TROX AITCS manufactures, supplies, installs and commissions its CO<sub>2</sub>OLdesk and CO<sub>2</sub>OLrac systems in conjunction with its refrigeration partner Star, all as a turnkey operation. Says Mr Hutchins: “We believe that since we are totally responsible – as a single-source supplier/contractor offering single-point responsibility – the client can rest assured, safe in the knowledge that we have paid attention to his every need. These are mission critical systems. There is no way that either we or the client can tolerate failure.”

#### **EDITORS’ NOTES**

The CO<sub>2</sub>OLdesk system can use either chilled water or R134a to condense the carbon dioxide and then circulate liquid CO<sub>2</sub> to each unit. The CO<sub>2</sub> returns as liquid and vapour. The more heat it absorbs, the more vapour that is produced. The liquid will not boil off completely as a gas because TROX AITCS has

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incorporated a 50% overfeed of CO<sub>2</sub> into the CO<sub>2</sub>OLdesk units. Once the CO<sub>2</sub> has absorbed the heat load from the PCs, it returns to a plate and shell heat exchanger where the process begins again.

1. Consultant HurleyPalmerFlatt performed an analysis of the CO<sub>2</sub>OLrac system installed at Imperial College, London, in order to compare a conventional low density chilled water system with a high density CO<sub>2</sub> data centre cooling system. It found that, for a 250kW system, using the high capacity CO<sub>2</sub>OLrac cooling system would result in a saving of 290 tonnes of carbon per year which would otherwise be given off at the power station to generate electricity to run the system.
2. TROX AITCS has installed 1.7MW of CO<sub>2</sub>OLrac systems, so the reduction in carbon generation from power stations as a result of these installations totals almost 1,500 tonnes per year. This equates to 1,000 tonnes per MW. On top of this, around 1.75 tonnes of CO<sub>2</sub> per MW is recycled as a cooling medium in the CO<sub>2</sub>OLrac systems. So a CO<sub>2</sub>-based cooling system like CO<sub>2</sub>OLdesk and CO<sub>2</sub>OLrac offers a double carbon footprint benefit: It removes potentially damaging CO<sub>2</sub> from the ecology and results in less CO<sub>2</sub> being produced at the power station.
3. International investment banking giant JP Morgan is installing the CO<sub>2</sub>OLdesk system at its Wood Street offices (see separate press release).

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### **PHOTOCAPTION:**

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