

Trox (U.K.) Ltd.

Caxton Way
GB-Thetford
Norfolk IP24 3SQ
Telephone 01842/754545
Telefax 01842/763051
e-mail trox@troxuk.co.uk

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Product Information
Equipment Cooling Unit
Type TECU
PI/2/27/B/2

Equipment Cooling Unit

Type CoolRac



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CoolRac Cooling Unit

In the modern world the reliance on computers to co-ordinate and control the environments that we work in is burgeoning.

Engineers maintaining and refurbishing broadcasting and IT facilities do not have the luxury of downtime. Equipment reliability and stability is of paramount importance.



The introduction of packaged digital equipment in purpose built racking has led to situations where racks of units are mounted adjacent to one another. The air induced through the units to cool them increases in temperature by up to 10°C per unit hence air entering the 1st unit at 20°C will leave the 3rd unit at temperatures around 50°C.

When this occurs, the inability to dissipate the heat generated can often lead to the failure of equipment.

The Trox Cooler Unit has been developed to counter this problem. It will not only reduce expenditure on hardware but will also remove the disruption caused by the failure of such a system.

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Performance

The best way to illustrate the problem related to the inability to dissipate heat from the equipment is shown below.

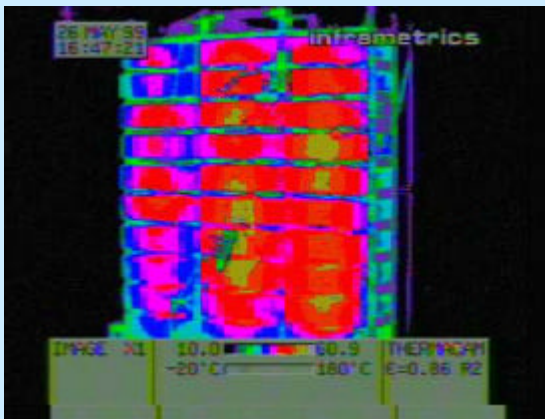


Image 1 – typical set up without Trox CoolRac.

The problems that occur in stacks of hardware are exemplified by this image. In the left-hand rack the fans associated with the digital hardware can provide sufficient cooling by drawing ambient air through them. The unit to the right of these induces air, whose temperature has been increased due to the cooling duty it provided for the equipment on its left. The culmination of this effect is that the units in the right-hand stack, are being cooled by air that is well above ambient temperature and consequently are operating at a temperature around 45°C to 50°C. This quite significantly exceeds the temperature that was envisaged by its designers. Hence, the risk of failure is markedly increased

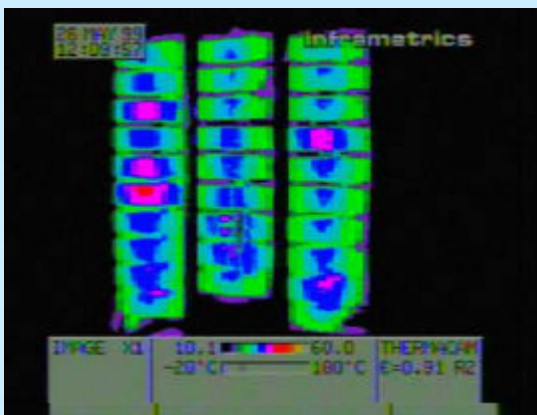


Image 2 – typical set up with Trox CoolRac.

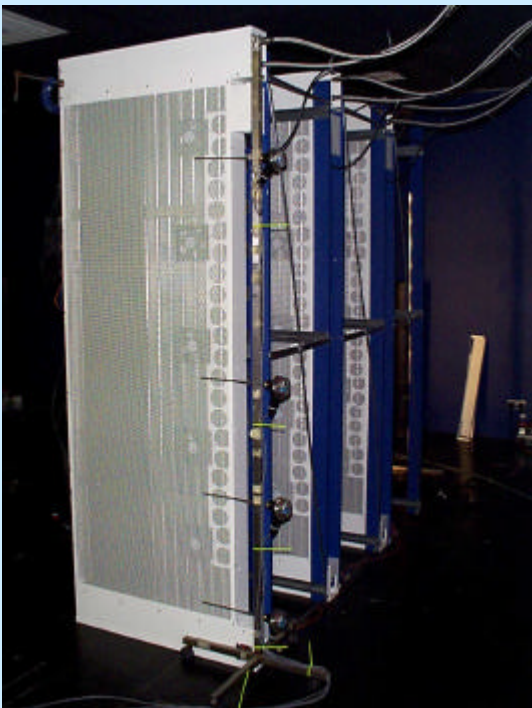
The benefits of fitting the Trox CoolRac are readily evident in this image. The CoolRac is placed between each rack of equipment and consequently provides cooling for the air passing between the stacks. Hence, all columns have something approaching a uniform cooling load and operate at a temperature between 20°C and 25°C.

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The CoolRac has been developed with the BBC to overcome genuine problems involving equipment failure. All the technology employed is proven and reliable. It is a tailor-made system designed by Trox (UK) Ltd in conjunction with the BBC. It has been tested comprehensively and improved in our laboratory.



Patent Application GB 9921594.9

The CoolRac has been designed such that it will suit both side to side air flow and front to back airflow through the equipment racks.

Both a 1kW and 2kW variants of the design are offered to satisfy different equipment storage densities within the racks. To remove 1kW of sensible heat requires a water volumetric flow rate of 300l/h and to dissipate 2kW requires 500l/h. The resistance of these units is 3kPa and 9kPa respectively.

Using a 2kW variant up to 4kW of thermal energy can be removed from an equipment rack filled with equipment that has a side to side airflow and 3kW per rack of equipment with a front to back airflow.

