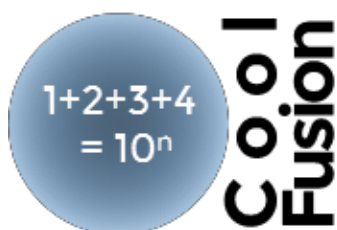


# Cool Fusion

## Anything Else Is Just Air Conditioning



### Cool Fusion™ – Anything Else is Just Air Conditioning

Cold Fusion, the replication of the nuclear engine that drives the stars, has long been a dream of physicists and engineers. Imagine cheap, manageable, almost limitless energy. Science has pursued this goal for many years, and continues to, despite it remaining frustratingly out of reach.

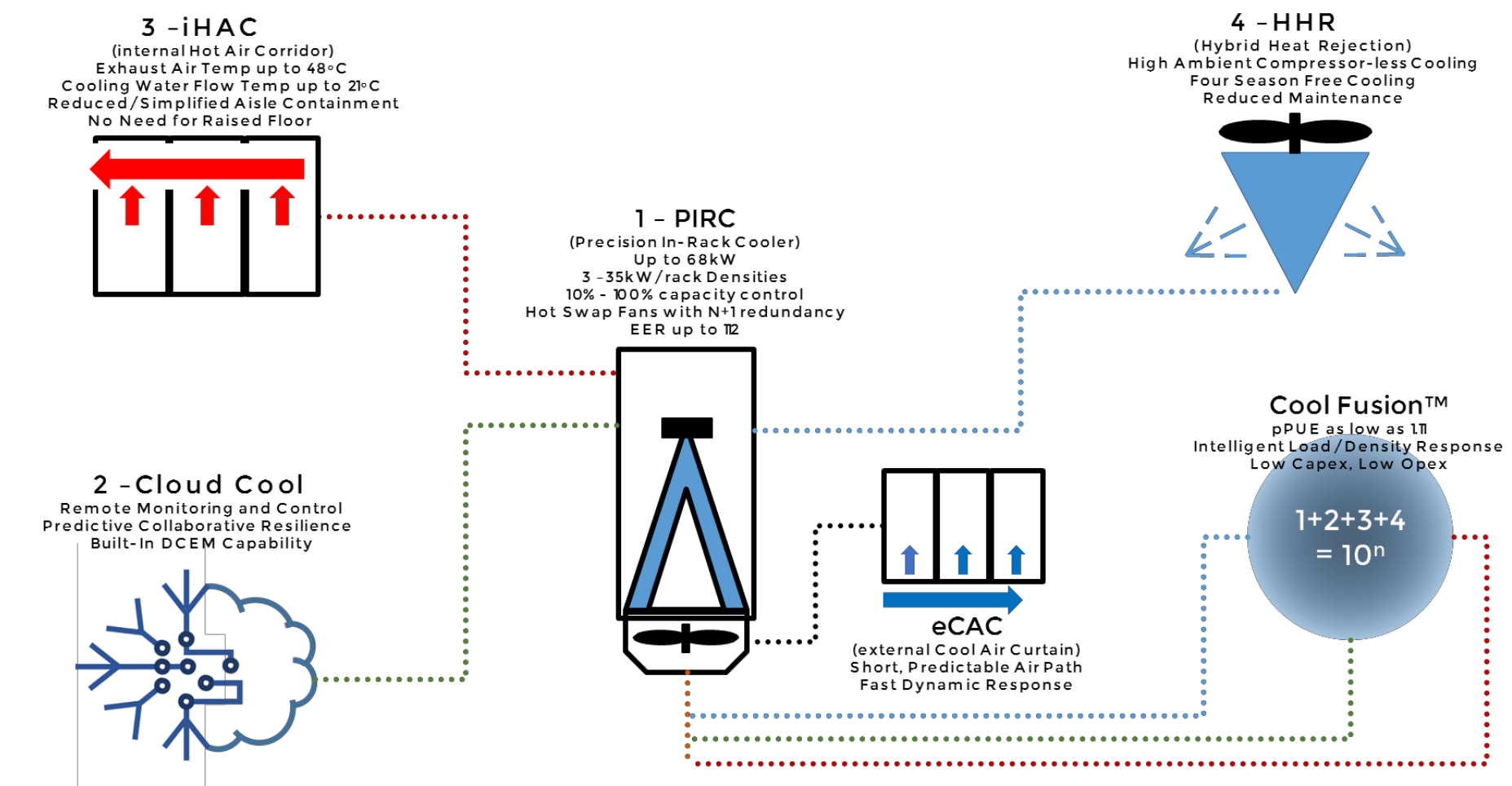
Optimum Data Cooling applied the same scientific principles to their pursuit of Cool Fusion™. Imagine effective, efficient, environmental management systems that deliver reliability and resilience to mission critical, high performance applications. This too has been a tough technical challenge. It demanded commitment, courage and the combined capabilities of visionary cross- disciplined engineers. Optimum Data Cooling is proud to announce that it has conquered Cool Fusion™.

Optimum Data Cooling has invented, developed and adapted a range of technologies that, combined, render peak performance from each. Because we understand how these different technologies interact and complement each other, Cool Fusion™ is always a “whole that is greater than the sum of its parts”. All our systems have intelligence and communication built in, and everything is designed to work together to bring you everything that you need for optimum performance and efficiency, and nothing that you don’t.

Cool Fusion™ can monitor and manage everything that your controlled environment needs to function optimally. Embedded into Optimum Data Cooling’s Cool Fusion™ designs are many of the features and functions that usually require the addition third of party BMS and systems. This makes the unit’s DCIM exceptional value for money as well as being easy to specify, to install and to manage.

Cool Fusion™ is designed for close control mission critical applications. This is high specification equipment, designed and built in the UK to deliver high performance 24/7 in the most demanding applications. Cool Fusion™ can be found, for example, in Data Centres, Operating Theatres, TelCo facilities as well as food preservation and processing applications.

A typical data Centre application exemplifies the power of Cool Fusion



**1 = Optimum Data Cooling's EN Range of Precision In-Rack Coolers.** Speed controlled EC fans, coupled with extended cooling coil surfaces and minimised airflow resistance, means that these units are the most powerful and efficient coolers on the market. All our PIRCs incorporate eCAC - short, direct, laminar air streams that mean the units always deliver air exactly where it is needed – to the inlets of the servers.

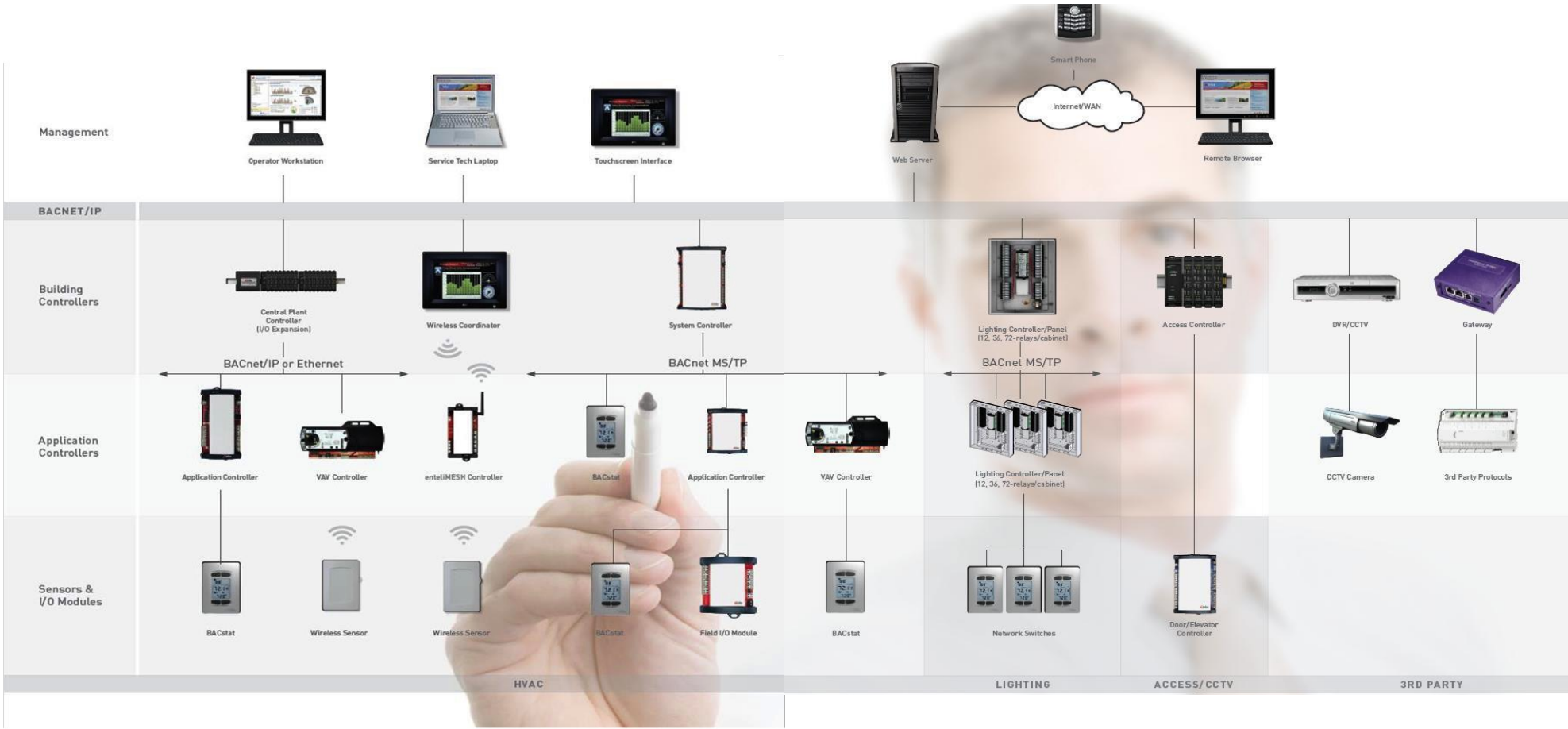
It is over three times more efficient to pump water to our close coupled coolers and then deliver air over predictable paths than it is to force large quantities of air into a data centre in the hope that it will end up where it is required. The higher return air temperatures afforded by iHAC means that this performance can be maintained even with elevated cooling coil temperatures.



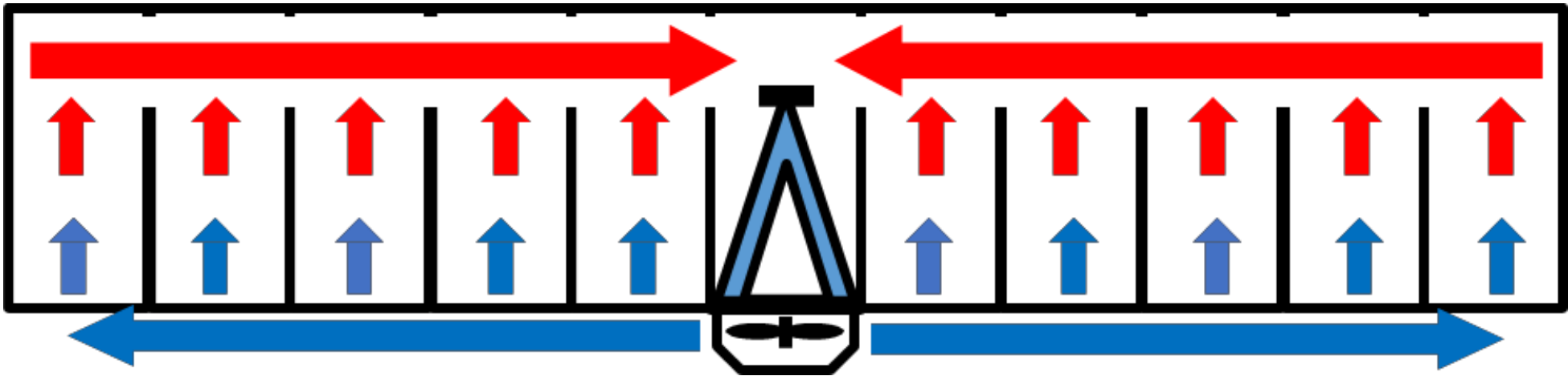




**2 = Cloud Cool** All **Optimum Data Cooling** equipment includes sophisticated embedded digital engines. These controls are highly flexible and communicate with each other to provide intelligent, responsive processing systems that monitor and react to their environment (we call it “Cloud Cool”). The system is based on the BACNet protocol, so not only do our units talk to each other, they can talk to almost anyone else’s too. This vendor neutrality is part of our philosophy – to make it simple to integrate with existing BMS products, for example. The multiple sensors and sophisticated monitoring that our units employ mean that many functions of a DCIM system are available from our equipment as standard. Power consumption at unit level is available via a network connection, for instance, as are efficiency metrics, IT inlet temperatures, fan speed and a host of early warning indicators and alarms.

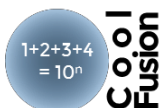
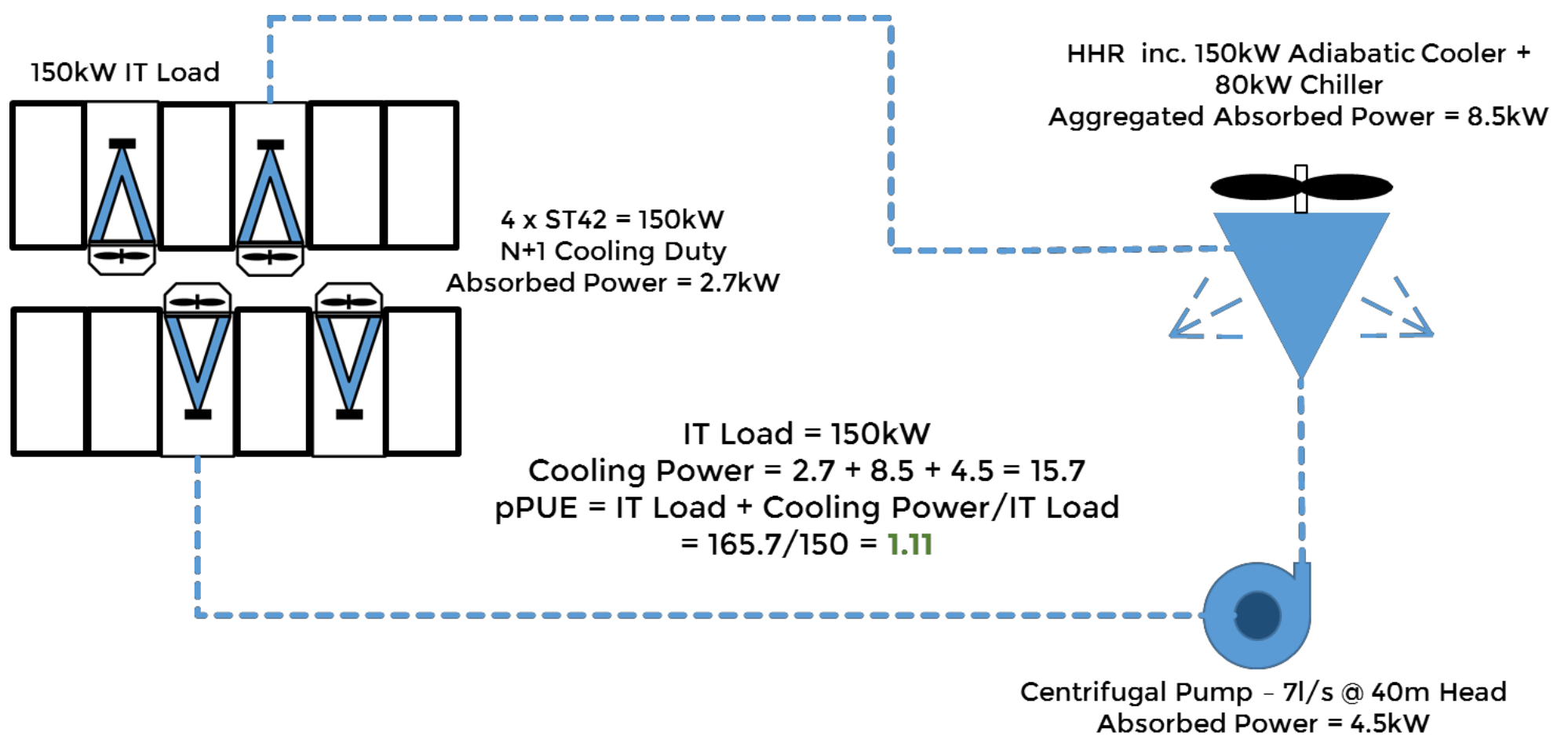


**3 = Optimum Data Cooling’s patented internal Hot Air Corridor (iHAC) system.** This provides the ultimate hot aisle segregation, removing the need for additional containment and allowing return air temperatures to rise whilst the “hot aisle” remains a comfortable environment for personnel.



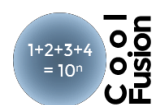


**4 = Hybrid Heat Rejection.** Because the combination of 1,2 & 3 allow the **Cool Fusion** system to operate with elevated water temperatures. With water flow temperatures of >18°C an Advanced Dry Cooler allows the system to operate without a chiller for over 95% of the year in the UK. Even factoring in the use of a top-up chiller for the remaining 5% of the year, **Cool Fusion** can deliver annualised pPUE figures of 1.11.



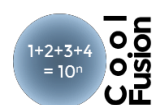
**Cool Fusion™ =**

The combination and optimization of all the factors above into a system that delivers performance, flexibility and intuitive integration in a way you won't have experienced before. And the **Cool Fusion** Factor just keeps on delivering.



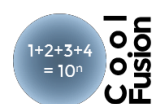
**Cool Fusion™ installations reduce initial costs.**

On a simple £/kW basis In-Rack Coolers can represent a lower capital investment than CRAC units, and that's without the other savings; no special aisle segregation is required, the combination of Row Heat Capture and In-Rack coolers means that the racks themselves provide sufficient air stream isolation. Even if the services are run under a raised floor (not essential) the complexity and cost of the floor will be much reduced compared to that of a floor that provides an effective air plenum.



**Cool Fusion™ installations release valuable space.**

Based on floor area alone a typical ST In-Rack installation will save between 10 and 15% allowing either more usable rack space or releasing the real estate for a more valuable purpose. Take into account the vertical saving of a reduced height raised floor and the savings really mount up. Reducing a 600mm underfloor air plenum to a 150mm service duct gives the potential for an extra 10U of space in every single rack in the data space. In a Co-Lo application this would mean an additional rack of saleable space for every five!



**Cool Fusion™ installations let your data management protocols really deliver.**

Moving processing power around to maximise efficiency also alters the density pattern of your facility. CRAC systems have always been poor at coping with hot spots, but when the hot spots move around the facility regularly and swiftly, they really don't have much chance. Even standard In-Row systems aren't able to respond to such changes efficiently and effectively. **Optimum Data Cooling's** Precision In-Rack Coolers are in the aisles, close to the servers. This allows the "Cloud Cool" intelligent communication built into the coolers to detect changes in load in specific areas and respond accordingly. This leaves you free to move capacity around to best effect without having to worry about heat densities or hot spots.