

IT Cooling Solutions

STULZ Raised Floor Pressure Control

More efficiency in the raised floor void



Precise air delivery in the raised floor void – exactly the right amount of air for server racks

A flexible raised floor system is an important part of any data centre. Openings in the raised floor ensure that the air chilled by the air-conditioners gets right to the spot where it is needed.

The ideal raised floor system provides a clear duct for supply air, which is fully leak-proof and has a defined static pressure. If necessary, dynamic pressure can be converted to static pressure by strategically placed “baffle plates”. The computer room

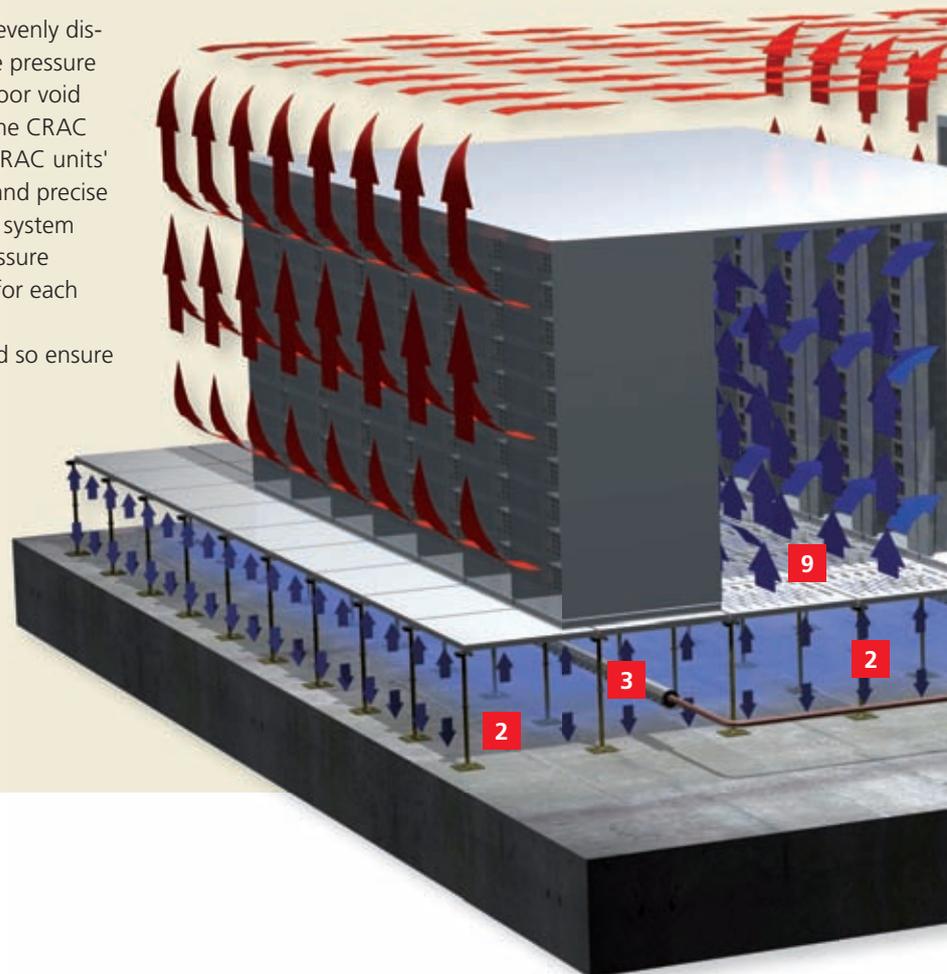
air-conditioning (CRAC) units blow the chilled air into the floor and via the openings in the floor grilles, the air gets right to the spot in the data centre that needs to be cooled. This may sound simple, but if we take a closer look, we see that the technical challenges are only just beginning. Because the heat load in the data centre is not uniform, raised floor grilles that are adjustable or have different perforations have to be used, to cater for the nominal cooling requirements of the server racks. As the heat load changes over time, so the quantity of air required by

The system

The static pressure in the floor void is measured by evenly distributed differential pressure gauges. The adjustable pressure range is 0–250Pa. The measured values from the floor void are collated in measuring transducers, and sent to the CRAC unit controller via a signal cable. The speed of the CRAC units' EC fans is controlled as a function of this pressure, and precise control by the STULZ C7000 controller prevents the system from exceeding a defined level. One differential pressure gauge and one measuring transducer is connected for each CRAC unit.

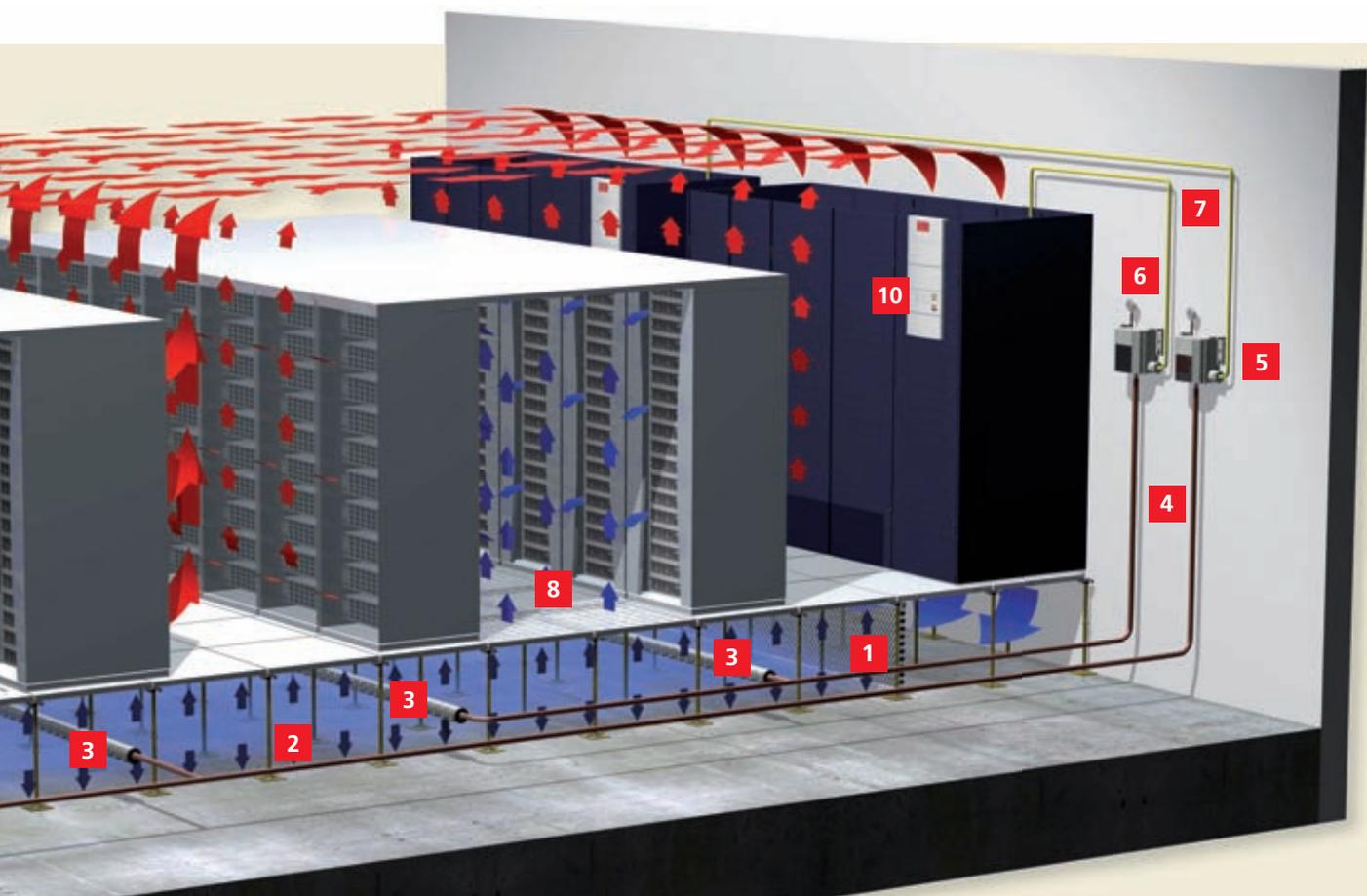
The CRAC units are connected via a bus system, and so ensure constant pressure in the floor void as a priority.

- Energy management regardless of the type of rack used
- Racks are supplied with defined quantities of air
- “Hot spots” are avoided
- Expandable system



the individual server racks also fluctuates. In an unregulated raised floor system, these conditions will cause the pressure to vary. The result? Often, more cold air is used than is actually needed, in order to ensure reliable heat dissipation at all costs. In the end, this excess supply of chilled air leads to unnecessary energy consumption, with rising costs as a consequence. In order to solve this problem, differential pressure gauges are installed in the floor void, which are incorporated in the air-conditioning control loop. STULZ raised floor pressure control

keeps the pressure constant, and therefore ensures that racks and servers are always supplied with exactly the right quantity of air. As well as changing the cooling capacity via the volume of water, the system also reacts to fluctuating heat loads by adjusting the required quantity of air. The cooling capacity is adjusted by means of a speed-controlled pump or a CW valve.



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| 1 Baffle plate (optional) | 5 Differential pressure transducer | 8 Zone with a low heat load |
| 2 Static pressure in the floor void | 6 Pressure sensor for measuring atmospheric pressure | 9 Zone with a high heat load |
| 3 Differential pressure gauge for measuring the pressure in the floor void | 7 Signal cable for transmitting the pressure signal to the air-conditioner controller | 10 Precision air-conditioners |
| 4 Pressure line (hose or pipe) | | |

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IT Cooling Solutions

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