



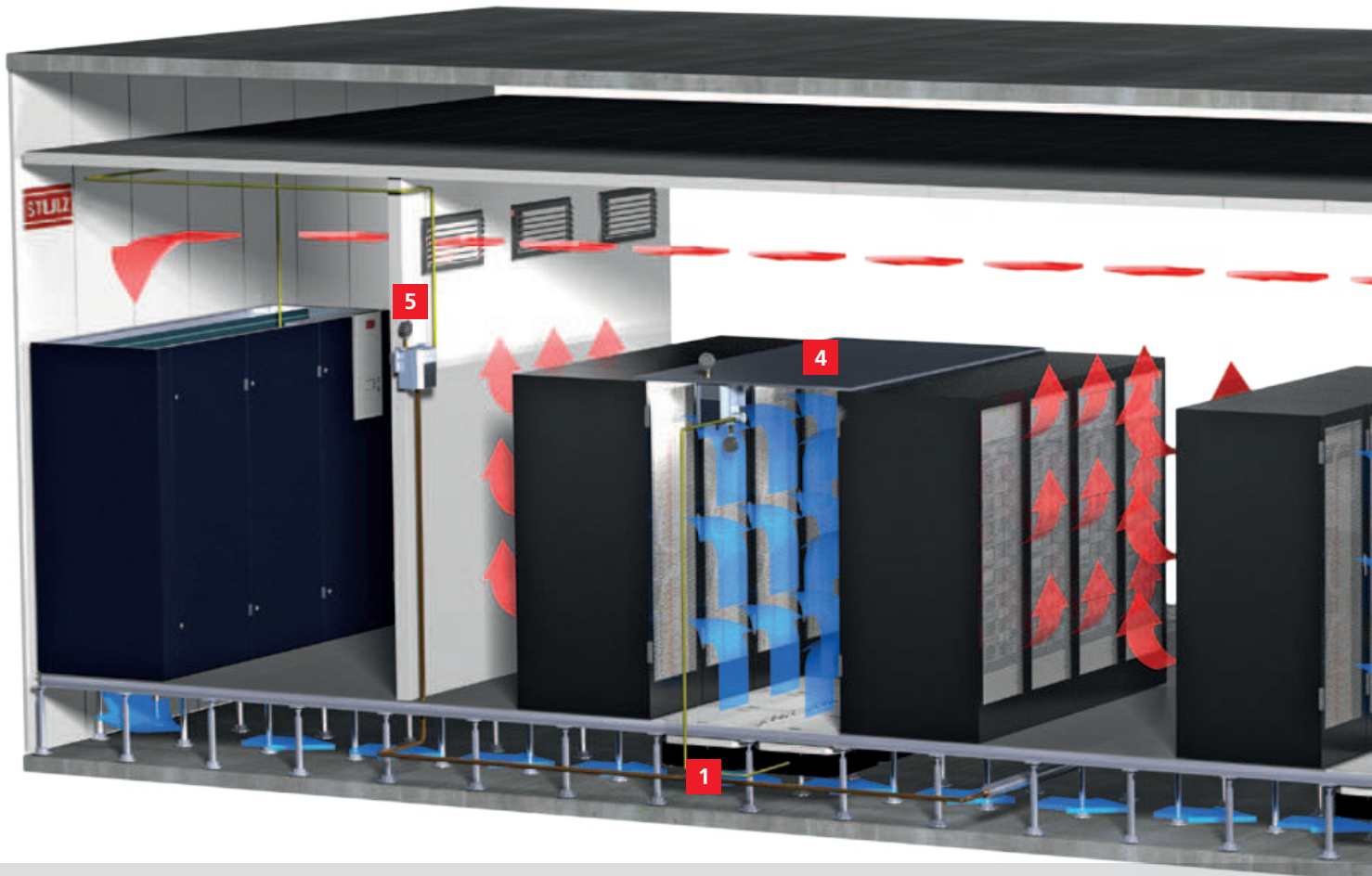
STULZ

IT Cooling Solutions

STULZ AirModulator, AirBooster and AirBooster Pro

Air Flow Management for Data Centres

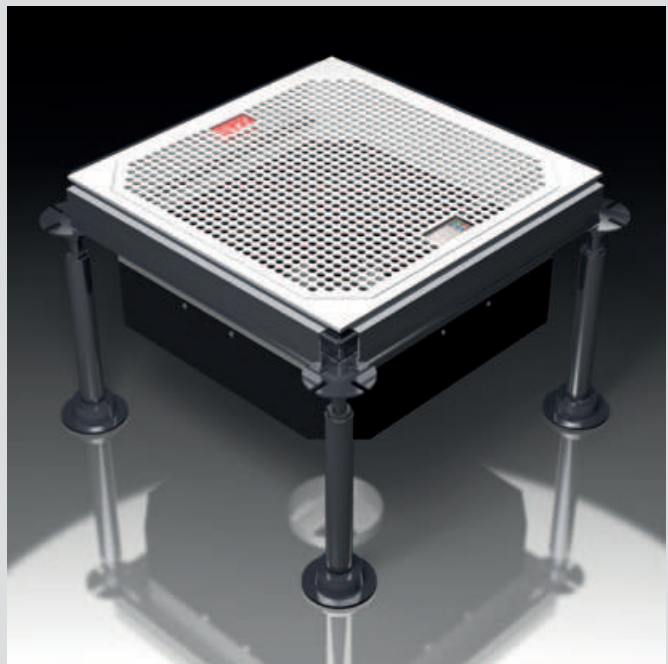
Greater flexibility for cooling data centre hot spots



Air flow management for data centres with closed-circuit air conditioning

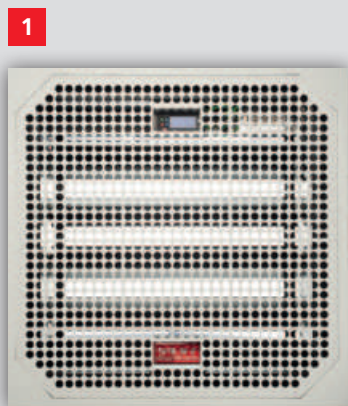
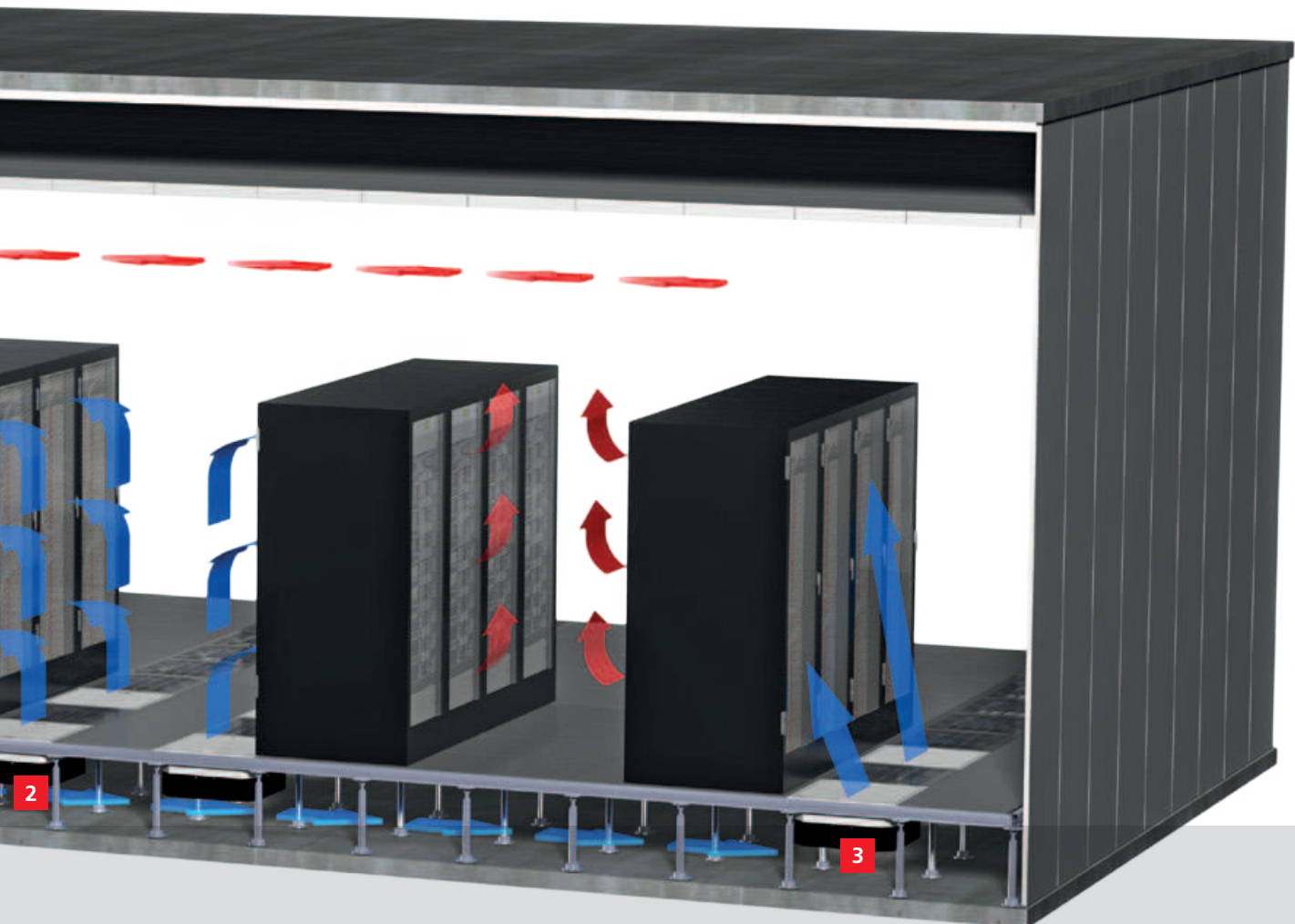
Air flow system solutions from the STULZ AirBooster series are installed directly in front of the server rack, in the raised floor. Integrated sensors ensure that cold air requirements are automatically determined, and exactly the right air flow rate is provided based on the required temperature.

All elements of STULZ air flow solutions utilise the same air conduction system, from the air conditioners to the racks, and are controlled exactly in line with cooling requirements.

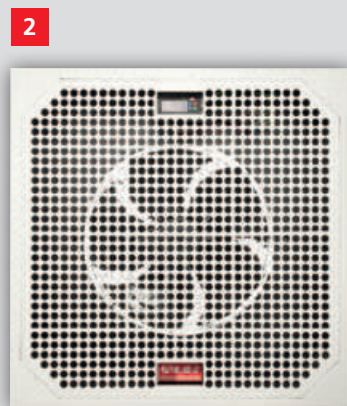


Straightforward and flexible: STULZ AirBooster and AirModulator cool data centre hot spots

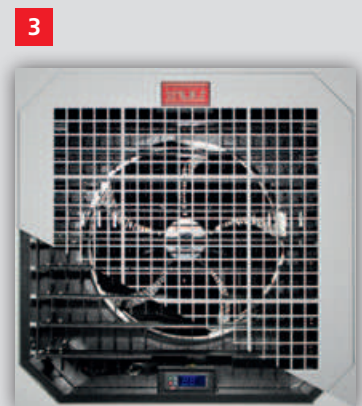
Are you operating a data centre with traditional closed-circuit air conditioning and want to cool hot spots quickly and simply? STULZ new air flow management solutions, AirModulator, AirBooster and AirBooster Pro, can be installed in minimal time in an existing raised floor and will immediately and reliably begin cooling hot spots.



AirModulator
with louvred dampers



AirBooster
with infinitely variable EC fan speed control



AirBooster Pro
with adjustable air transfer grille and variable speed EC fan

4 Sensor for differential pressure control housing (Pressure Transmitter Module - PTM)

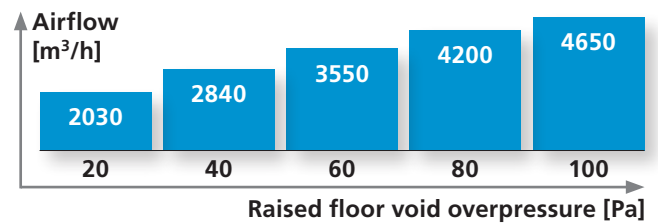
5 For optimal server performance we recommend also using the STULZ differential pressure control to drive the closed-circuit air-conditioning unit.

STULZ AirModulator – for efficient cold aisle cooling

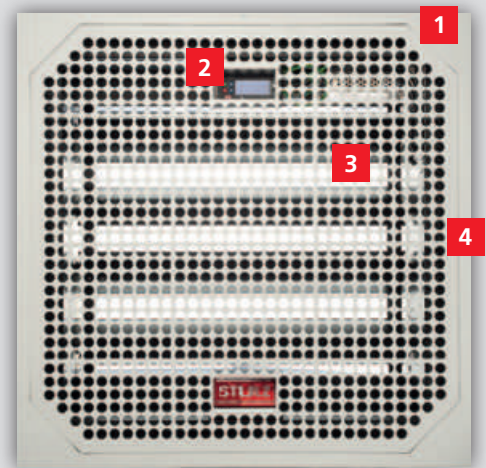
Are you operating a data centre with cold aisle containment and want to protect integrated server fans against excess pressure? STULZ AirModulator has louvre dampers that are fitted under the floor panel and can be precisely positioned via a servo motor. This provides smart, efficient air control from your raised floor, using variable apertures to release only the volume of air actually required by the racks. The changing cooling requirements of individual racks are met by AirModulator's demand-regulated damper positioning. This means that the localised pressure resulting from fully open dampers under a rack will reliably cool it at maximum load.

STULZ AirModulator key benefits:

- › Suitable for raised floor installation in data centres with homogenous pressure conditions
- › Suitable for cold aisle containment
- › Temperature measurement via two sensors
- › Optional pressure control (PTM)
- › Precisely designed for standard raised floor panels
- › Easy installation, operational in minimal time



A mean is calculated from the two temperature sensors and compared with the controller setpoint. If the temperature difference between the mean and setpoint increases, the dampers open, increasing the flow of cool air from the raised floor to the servers.



Dimensions [WxHxD]: 600x240x600 mm

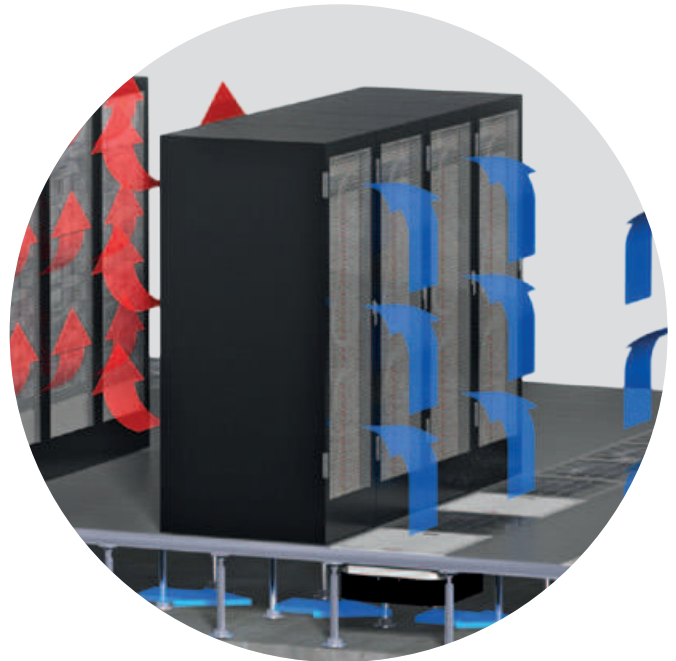
- 1 Stable, hardwearing design
- 2 Microcontroller
- 3 Adjustable louvre dampers
- 4 Servo motor-controlled fins

STULZ AirBooster – for cooling high-density racks of up to 15 kW

Do you want to counteract data centre hot spots simply and efficiently? Where there is a sufficient air supply in the raised floor, the new STULZ AirBooster offers cooling for high-density zones, without the need for major modifications. AirBooster transfers the necessary air from the raised floor and efficiently supplies the server racks with the required amount of cold air via an infinitely variable EC fan.

STULZ AirBooster key benefits:

- › Suitable for data centres with raised floor
- › Suited to cooling localised HD zones
- › Air flow of up to 2650 m³/h
- › EC fan for precise air flow supply
- › Temperature measurement via two sensors
- › Optional pressure control (PTM)
- › Precisely designed for standard raised floor panels
- › Easy installation, operational in minimal time
- › No containment required



Fan	EC (variable speed control)
Number of fans per unit	1
Maximum air flow	2,650 m ³ /h
Distributed load	1,000 kg/m ²
Dimensions [W x H x D]	600 x 210 x 600 mm
Sensors	2



If the temperature difference between the mean and setpoint increases, the EC fan speed increases correspondingly



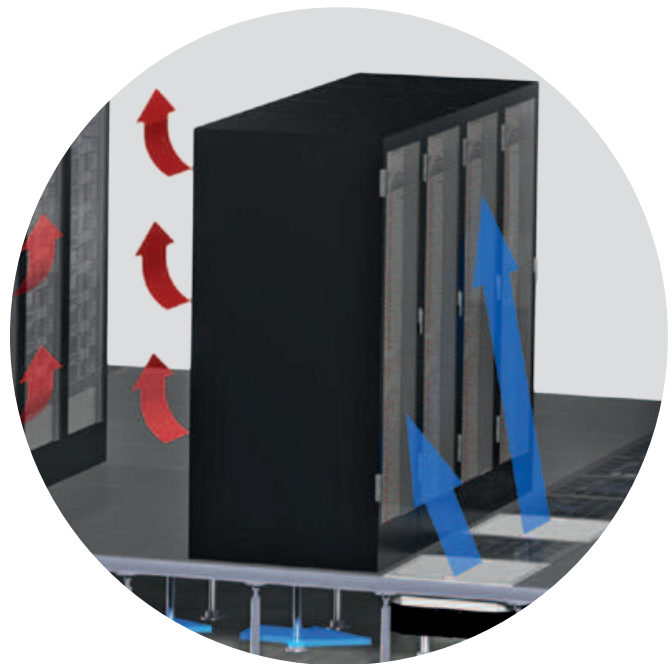
- 1** Stable, hardwearing design
- 2** Microcontroller
- 3** EC fan

STULZ AirBooster Pro – for targeted hot spot cooling

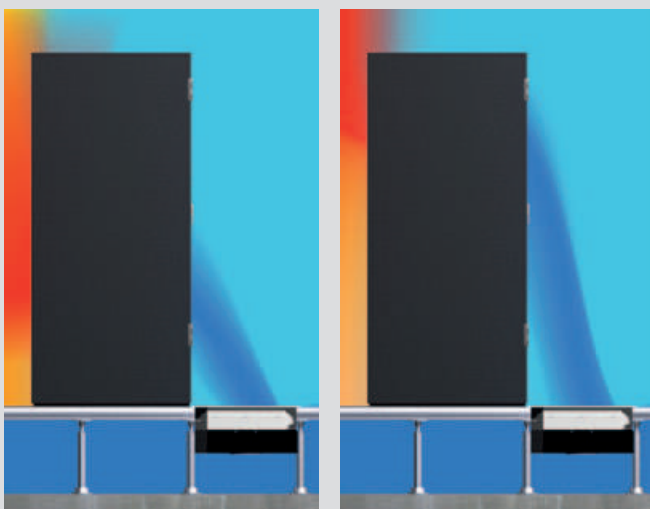
Do you want cooling targeted exactly at the hot spot areas in your data centre? AirBooster Pro's manually adjustable air transfer grille is designed to provide just this kind of pinpoint accuracy. The vanes are precisely positioned to target locations that require increased cooling. This concentrated air flow goes to work on the targeted areas, reducing overall hot spot problems by also ensuring an adequate supply of cold air is still supplied to other areas. In short, the right climate is therefore provided exactly where it's needed most – and without complicated installations and enclosures.

STULZ AirBooster Pro key benefits:

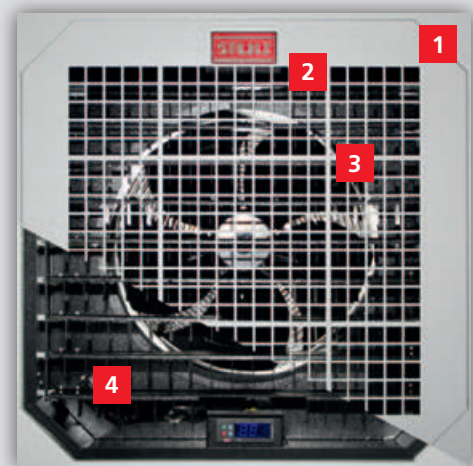
- › Suitable for data centres with raised floor
- › Suited to cooling localised HD zones
- › Air flow of up to 2500 m³/h
- › Adjustable air conduction fins for precise air conduction
- › EC fan for pinpoint accuracy of air flow supply
- › Temperature measurement via two sensors
- › Optional pressure control (PTM)
- › Precisely designed for standard raised floor panels
- › Easy installation, operational in minimal time
- › No containment required



Fan	EC (variable speed control)
Number of fans per unit	1
Maximum air flow	2,500 m³/h
Distributed load	1,000 kg/m²
Dimensions [W x H x D]	600 x 202 x 600 mm
Sensors	2



Manually adjustable air transfer grilles allow air flow to be directed to the most heat-stressed areas, depending on server rack equipment



- 1 Stable, hardwearing design
- 2 Microcontroller
- 3 EC fan
- 4 Air transfer grille with adjustable vanes



Intelligent pressure control for data centres

STULZ rapid response air flow management

Pressure regulation in STULZ air flow management solutions is based on integrated temperature management in each server. Individual processor temperatures are measured, and the server fans regulate themselves on the basis of the thermal load.

Reliable server temperature management requires pressure in the data centre to be constant. Ideally, air from the cold aisle should be conveyed exclusively by the server fans through the rack, not forced through due to pressure differences between the cold and hot aisles. In aisle containment particularly, excessive air can lead to over-pressurisation.

Therefore pressure control replaces standard temperature regulation so that pressure differences can be kept within adjustable limits. If there is a pressure increase, for example due to a low server discharge rate, the fan speed decreases or the dampers narrow their opening angle.

A data centre's raised floor should be designed to maintain homogeneously distributed overpressure of a defined level. Where the height of the raised floor is sufficient, this can be achieved by pressure-regulated closed-circuit air-conditioning units.

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IT Cooling Solutions

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... With specialist, competent partners in our subsidiaries and exclusive sales and service partners around the world. Our five production sites are in Europe, North America and Asia.