

STULZ

CLIMATE. CUSTOMIZED.



AirBooster 2 and AirModulator 2

**More efficient cooling of your server racks
with airflow management solutions from STULZ**

STULZ air conditioning systems for mission-critical applications



Since its foundation in 1947, STULZ has evolved into one of the world's leading air conditioning system suppliers for mission-critical applications. The company has undergone continuous expansion since 1974 in Germany and abroad with the development, production, installation and service of precision air conditioning systems, chillers and humidifying systems for IT data centers and telecommunications installations.



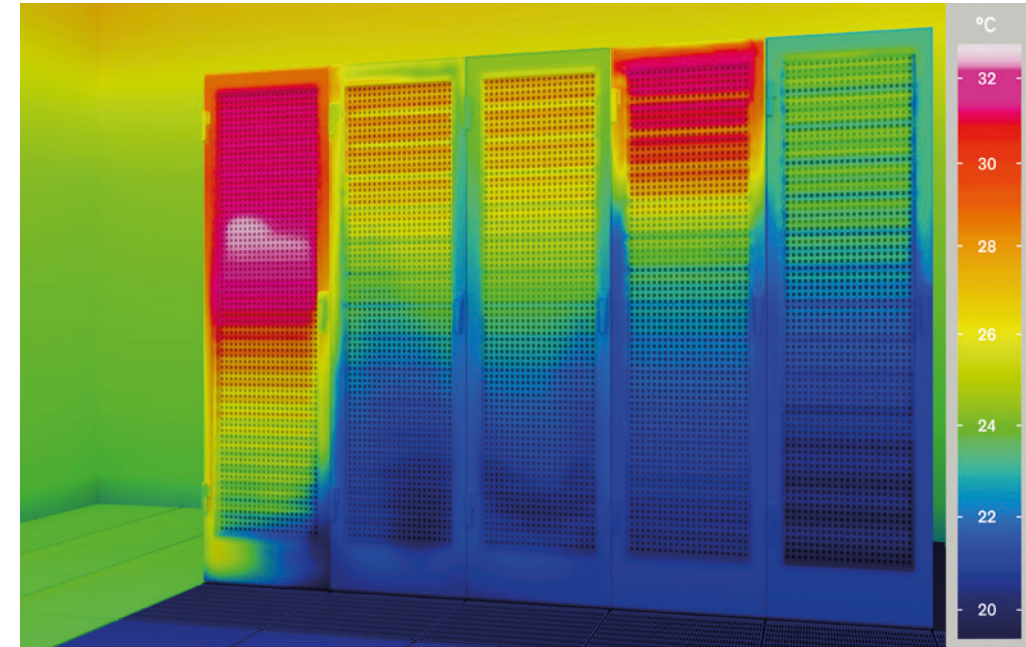
Technical development from Germany

We put a great deal of experience and innovative spirit into our air conditioning systems. Engineers, specialist departments and sales employees work closely together and are involved through all stages of development, all the way to the finished product. We brook no compromise where the efficiency of our products is concerned, and cost-effective operation is at the heart of our endeavors.

STULZ worldwide

STULZ is a global company with headquarters in Hamburg, Germany, 19 subsidiaries, 7 production sites, plus sales and service partners in more than 140 countries.

Airflow management solutions from STULZ



A thermographic image renders hot and cold zones in the data center visible. This is how you can recognize critical zones in your server racks.

Server racks deployed in a data center feature different heat loads according to the application. In this era of server virtualization and cloud technologies, changing utilization is a matter that has to be addressed.

It results in the over or undersupply of cold air to your servers, which can lead to increased operating costs or even overheating with subsequent server failure.

If you operate a data center with traditional closed-circuit air conditioning and want to cool your servers based on need, STULZ has the ideal airflow management solution for you.

In just a few simple steps, the new AirModulator 2 and AirBooster 2 units from STULZ can be installed in the existing raised floor directly in front of the server rack, where they immediately ensure optimum air conduction and hot spot prevention.

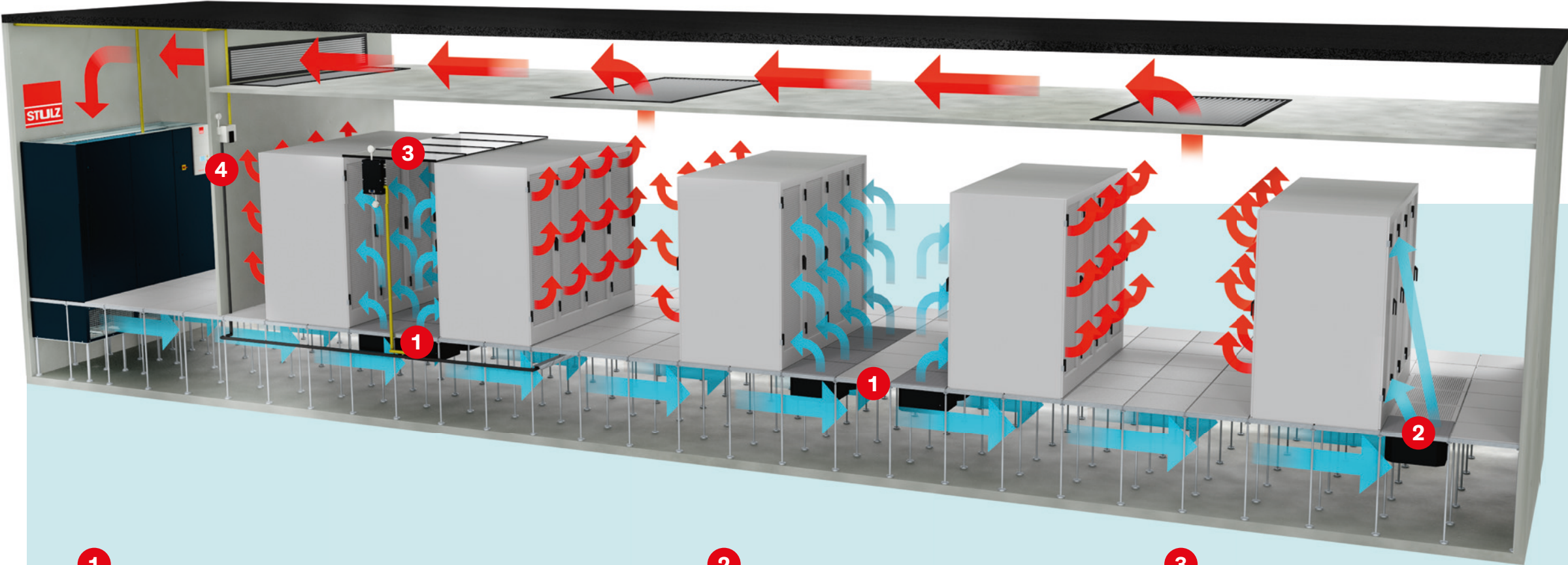
+ Benefits at a glance

- Control based on cooling needs for an efficient and reliable air supply
- Easy installation, operational in minimal time
- UL and CE compliant
- Can be connected to BMS systems
- Grills available in two designs for individual requirements
- Perfect fit for standard raised floor systems with grid size 600 mm x 600 mm
- Low height allows installation under the raised floor (400 mm)
- Service available worldwide



Greater flexibility for cooling data center hot spots

Airflow management solutions from STULZ are installed in the raised floors between server racks and air conditioning systems, and therefore utilize the air conduction of the air conditioning systems. Provided that the airflow in the raised floor is sufficient, the units supply your IT precisely according to cooling needs. Integrated sensors ensure that cold air requirements are automatically determined and the necessary airflow is provided. Fast, simple and reliable.



1

AirModulator 2

Suitable for use where there is an adequate air supply and constant pressure in the raised floor.

- For preventing oversupply, increasing energy efficiency and protecting fans in the server from excess pressure
- For constant operating conditions for multiple cold aisle enclosures supplied via a single raised floor
- Needs-based cooling despite a fluctuating heat load

2

AirBooster 2

Suitable for use where there is an adequate air supply and low static pressure in the raised floor.

- For the simple elimination of hot spots and for cooling high-density racks without the need for structural alterations to the data center
- For the targeted cooling of rack areas that require more cooling
- When the static pressure in the raised floor is too low and some server racks are therefore not adequately supplied
- If servers with a low heat load in an existing data center have been replaced by high-density server racks with a much higher heat load

3

External pressure control module

For airflow management units without integrated controller: Pressure control for up to 10 AirModulator 2 and AirBooster 2 units

4

Raised floor pressure control

For a better supply to servers, we recommend also using STULZ raised floor pressure control to manage the closed-circuit air conditioning unit. As server load in the data center increases, the STULZ pressure control module keeps the pressure in your raised floor constant, making sure that racks and servers are always supplied with exactly the right quantity of air.

You can find more information in the latest STULZ brochure "STULZ Raised Floor Pressure Control".



AirModulator 2 – Efficient cooling with fluctuating heat loads

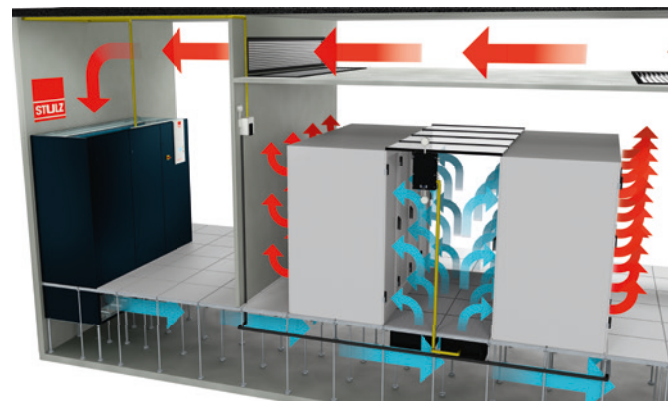
As heat loads in the data center fluctuate, some server racks are cooled more than needed, leading to unnecessary operating costs. To increase energy efficiency, the AirModulator 2 units reduce the supply of air to these racks. The units feature louver dampers, which can be positioned precisely via a servo motor. This way, they only allow as much air out of the raised floor as is actually needed by the racks.

From the measurements by the three temperature sensors, a mean is calculated and compared with the controller setpoint. If the temperature difference between the mean and setpoint grows, the dampers open, increasing the flow of cool air from the raised floor to the servers.



- 1 Microcontroller
- 2 Adjustable louver dampers
- 3 Servo motor with return spring for damper control
- 4 Maximum damper surface

Needs-based cooling in the cold aisle



With needs-based airflow control, energy consumption for air conditioning in the cold aisle can be reduced. When several cold aisle enclosures are supplied from one raised floor, in particular, the varying heat loads of the individual aisles must be taken into consideration, to ensure constant server operating conditions. AirModulator 2 units are the ideal solution here.

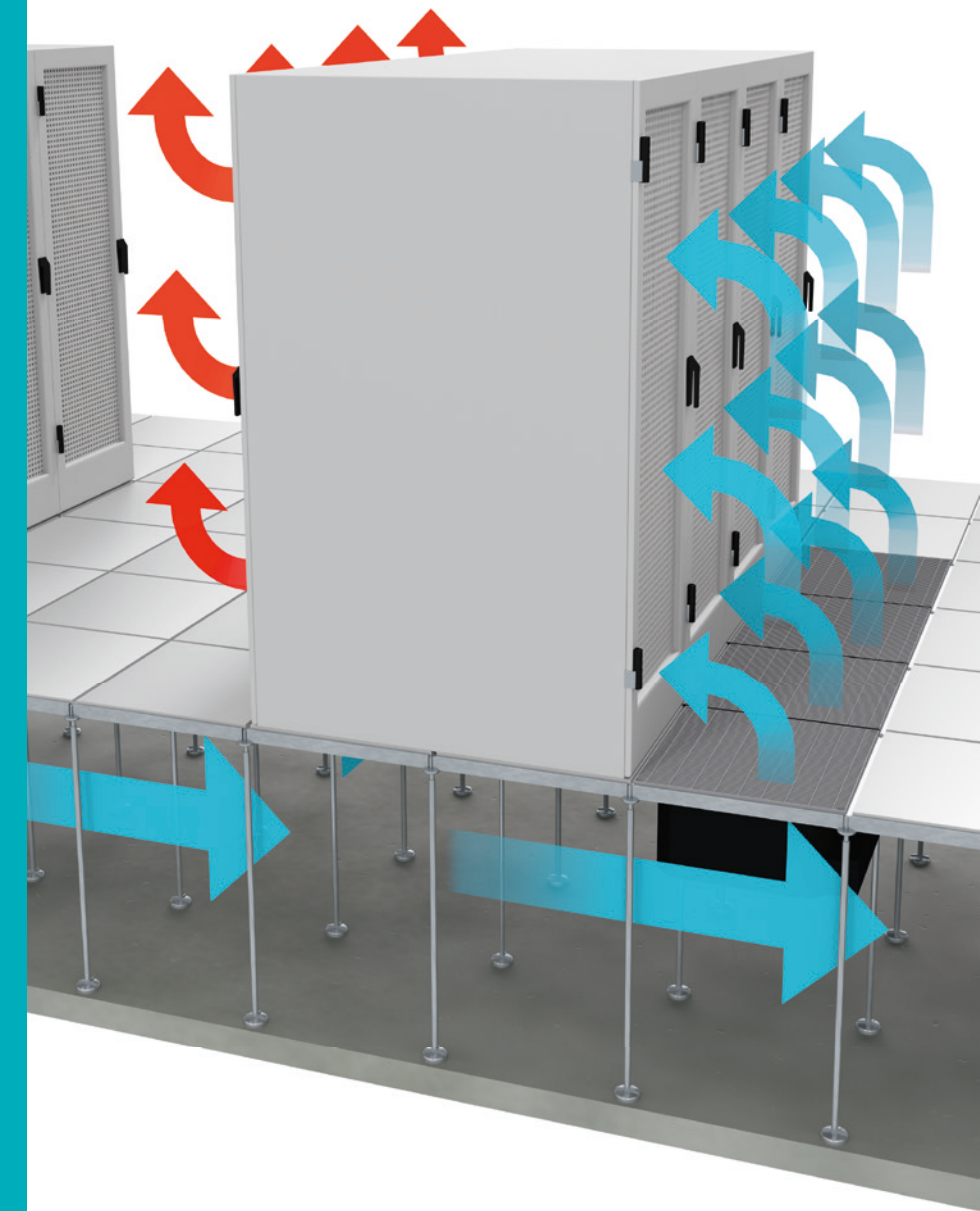
+ Benefits at a glance

- High energy efficiency thanks to precise control based on cooling needs
- Easy installation, operational in minimal time
- No unnecessary oversupply of the servers in cold aisle enclosures
- To ensure safety, the dampers open automatically in the event of power failure
- Protects the fans integrated in the servers from excess pressure
- Designed for smaller pressure drops (maximum damper surface)
- Low leakage rate when dampers are closed: 35 m³/h at 20 Pa
- Temperature measurement by three sensors
- Optional pressure control

Efficient cooling without structural alterations

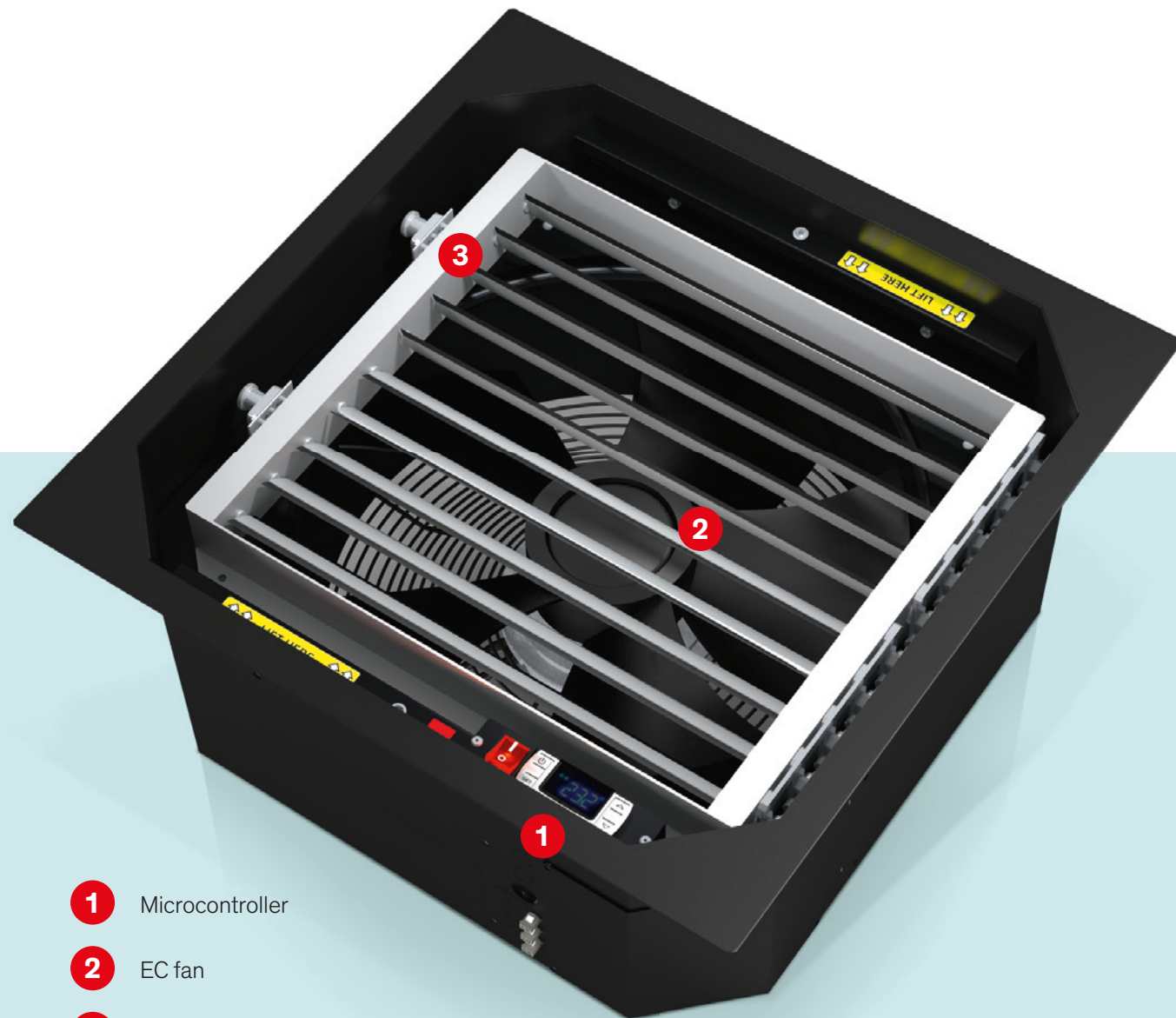
AirModulator 2 units offer an efficient solution for data centers that have an adequate air supply in the raised floor, and where hot and cold aisles are not separated by structural measures.

The targeted supply of cold air directly in front of the server intake keeps the mixing of cold and hot air to a minimum. This significantly improves energy efficiency.



AirBooster 2 – For targeted cooling of hot spots

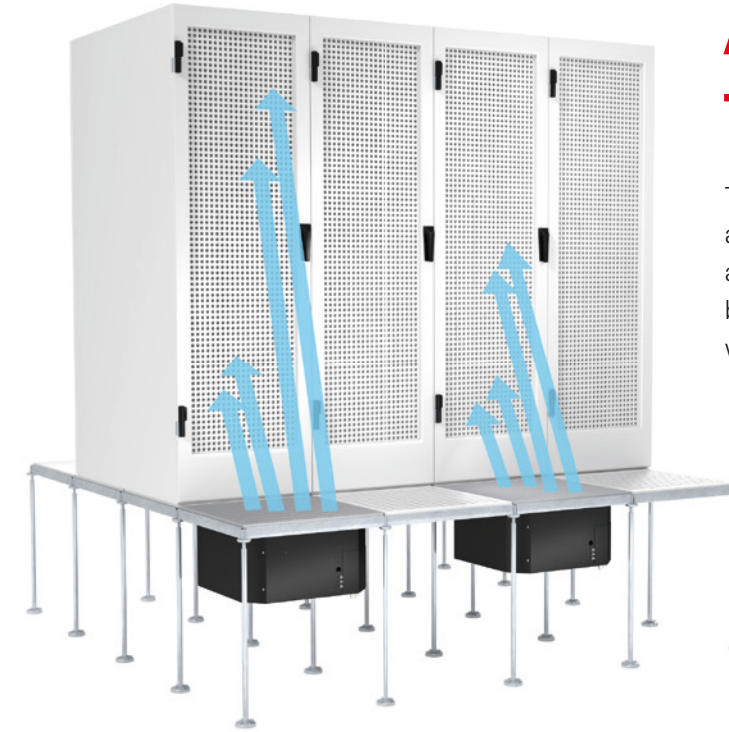
Do you want cooling precisely targeted at hot spots in your data center? The AirBooster 2's manually adjustable air conduction fins are designed to provide just this kind of pinpoint accuracy. The fins are precisely positioned to target locations that require increased cooling. This way, a concentrated flow of air acts on hot spots. The result is ideal supply air conditions without complicated and expensive installations and enclosures.



- 1 Microcontroller
- 2 EC fan
- 3 Adjustable air conduction fins

Air conduction in two zones

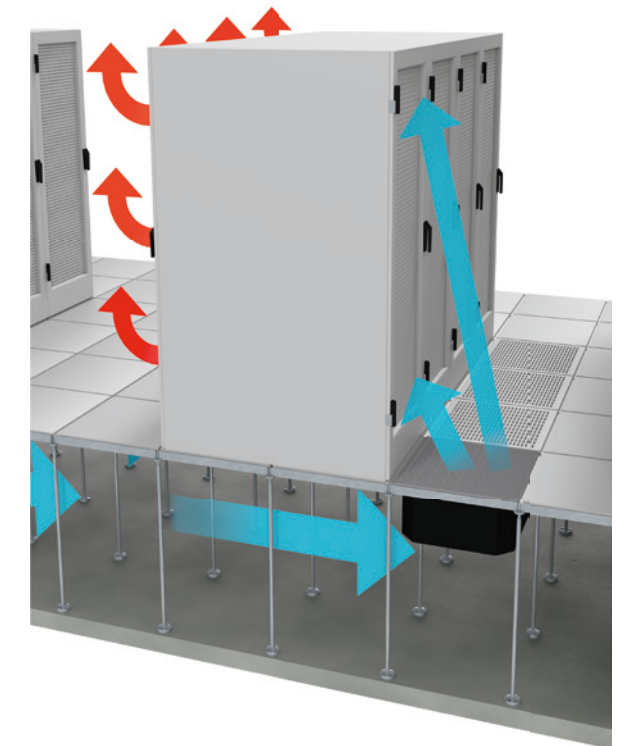
The air stream from the AirBooster 2 units can be aimed at two zones per server rack. The manually adjustable air conduction fins allow the airflow to be directed to the most heat-stressed areas, in line with server load.



The units are fitted with a variable-speed EC fan, a controller and several temperature sensors. These sensors, which are affixed to the server at different heights, measure the temperature of the air at the server inlet. The controller regulates the fan speed based on the measured temperature values and a configurable setpoint. If the server inlet temperature rises, the fan speed is increased to guarantee sufficient cooling of servers.

+ Benefits at a glance

- High precision cooling of hot spots in server racks
- Easy installation, operational in minimal time
- Adjustable air conduction fins for targeted air conduction in two zones
- EC fan for pinpoint accuracy of airflow supply
- Airflow of up to 4,360 m³/h
- Temperature measurement by three sensors
- Optional pressure control
- Low power consumption in rated operation
- No enclosure required



Optimum operating conditions thanks to smart control

For units with integrated control

- User-friendly interface and display
- RS485 interface for BMS
- RTU Modbus protocol
- Connection terminals for remote control On/Off
- Auxiliary contact for general alarm signals
- Three temperature sensors
- Unit of measurement on temperature display: °C or °F
- Illuminated On/Off switch
- LED status light

External pressure control module (optional)

- Connection terminals for 0 – 10 V control signals
- Pressure control for up to 10 units
- Pressure range: 10 – 80 Pa
- Centralized fault indication
- RS485 interface for BMS (Modbus RTU protocol)
- Zero potential contacts for alarm notifications
- Rapid connections for electrical supply, sensors and BMS contacts
- LED status light

Grills in two designs

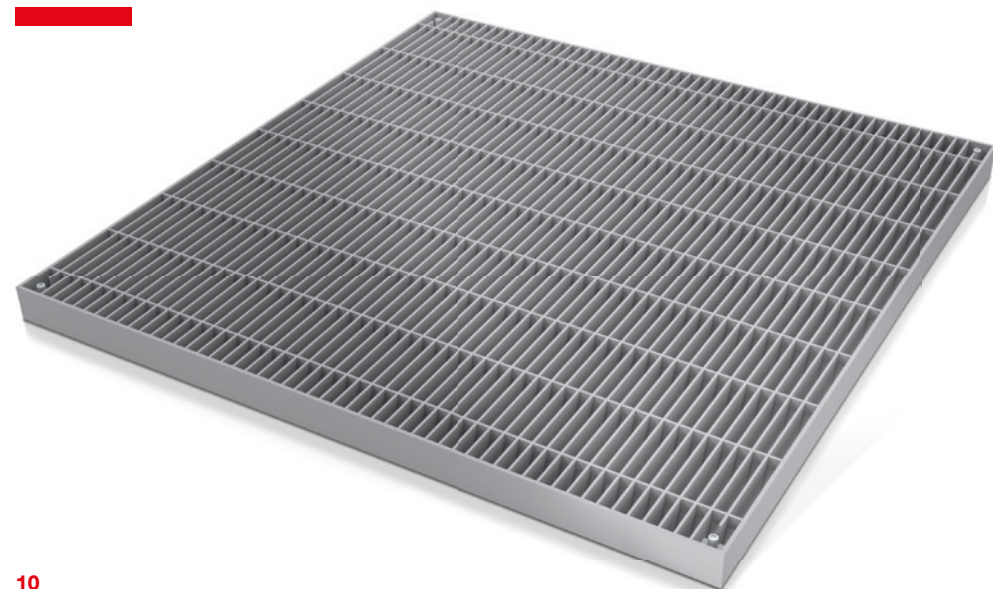
Airflow management units are supplied with either a light-duty or a heavy-duty grill, depending on requirements.

Light-duty grill for optimum air conduction

- Flow-optimized grill for small pressure drops
- BS EN 13264:2001 classification
 - Distributed load 33 kN/m²
 - Point load 1.5 kN over 25 mm × 25 mm surface area
- Dimensions (width x length x depth): 598 mm x 598 mm x 20 mm
- Can be adjusted to various raised floor grill thicknesses: 23–44 mm
- Color: RAL 7047

Heavy-duty grill for protection against mechanical stress

- Available as an option
- Protects the units against loads relating to lift trucks
- BS EN 13264:2001 classification
- Point load 4.5 kN over 25 mm × 25 mm surface area
- Dimensions (width x length x depth): 598 mm × 598 mm × 30 mm
- Can be adjusted to various raised floor grill thicknesses: 33–44 mm
- Color: RAL 7047



Technical data

AirBooster 2

		Airflow 2,900 m ³ /h	Airflow 4,360 m ³ /h
Dimensions (width, length)	mm	598 × 598	598 × 598
Dimensions (depth)	mm	260 + grill	260 + grill
Power consumption	W	75	474
Cooling capacity (Delta T ¹ 10K)	kW	10	15
Cooling capacity (Delta T ¹ 15K)	kW	15	22
Cooling capacity (Delta T ¹ 20K)	kW	19	29

AirModulator 2

Dimensions (width, length, depth)	mm	598 × 630 × 260 + grill
Airflow with dampers open 100 %	m ³ /h	3,600 ²⁾
Leakage rate with dampers closed	m ³ /h	35,5 ³⁾
Sensors		3

Excess pressure in the raised floor	Pa	10	20	30	40	50
Airflow	m ³ /h	2,881	3,225	3,950	4,561	5,100

Comments:

¹ Delta T: Difference in air temperature between the server inlet and server outlet

² Figures apply with ESP 25 Pa

³ Figures apply with ESP 20 Pa

For additional information on Delta T, please scan the QR code or visit our website at www.stulz.de/url/7EEr1



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Close to you around the world

With specialist, competent partners in ten German branches and in subsidiaries and exclusive sales and service agents around the world.

Our seven production sites are situated in Europe, North America and Asia.

For further information, please visit our website at www.stulz.com



You can find out more
on our product page.