



## **deltaclima CoolWall®**

We provide you with the perfect air-conditioning solution for your computer centre!



**Weiss Klimatechnik GmbH**  
Passion for Climate



# deltaclima CoolWall®

Greater performance, lower energy consumption, greater flexibility, lower space requirement

## Perfect air-conditioning for your computer centre

The requirements which computer centres need to meet are continually growing. Increasing quantities of data and ever expanding capacities mean that computer rooms need continually-expanding cooling capacities. This leads to an increase in energy costs and, frequently, associated shortages of space. The required cooling capacity is no longer achieved in extreme cases.

The deltaclima CoolWall® from Weiss Klimatechnik GmbH represents an intelligent solution for computer rooms of all sizes. The flexible, high-output and energy-saving system is recommended for both new installations and as a retrofitting solution.



### A reliable principle

The deltaclima CoolWall® functions in the same manner as an air-conditioning cabinet, with fans for air conveyance and a heat exchanger to cool the air. Whereas any air-conditioner unit can only exploit the heat exchange surface in the device itself, the deltaclima CoolWall® utilises the complete height and width of the computer room to cool air. The entire IT room thus becomes an air cooling unit.

### Adequate output for every need

The considerably-expanded cooling surface and flexible air flow layout with fans in the double floor practically doubles the specific cooling capacity when compared to precision air-conditioner units. Consequently, the output of the deltaclima CoolWall® increases flexibly relative to the growing cooling demands of computer rooms. This ensures the achievement of much enhanced scalability when compared to conventional precision air-conditioners.

| Criteria                 | deltaclima® | deltaclima CoolWall® |
|--------------------------|-------------|----------------------|
| Cooling capacity > 300kW |             | ✓                    |
| Low space                |             | ✓                    |
| Cold chamber concept     |             | ✓                    |
| Innovative system        |             | ✓                    |
| Micro scalability        |             | ✓                    |

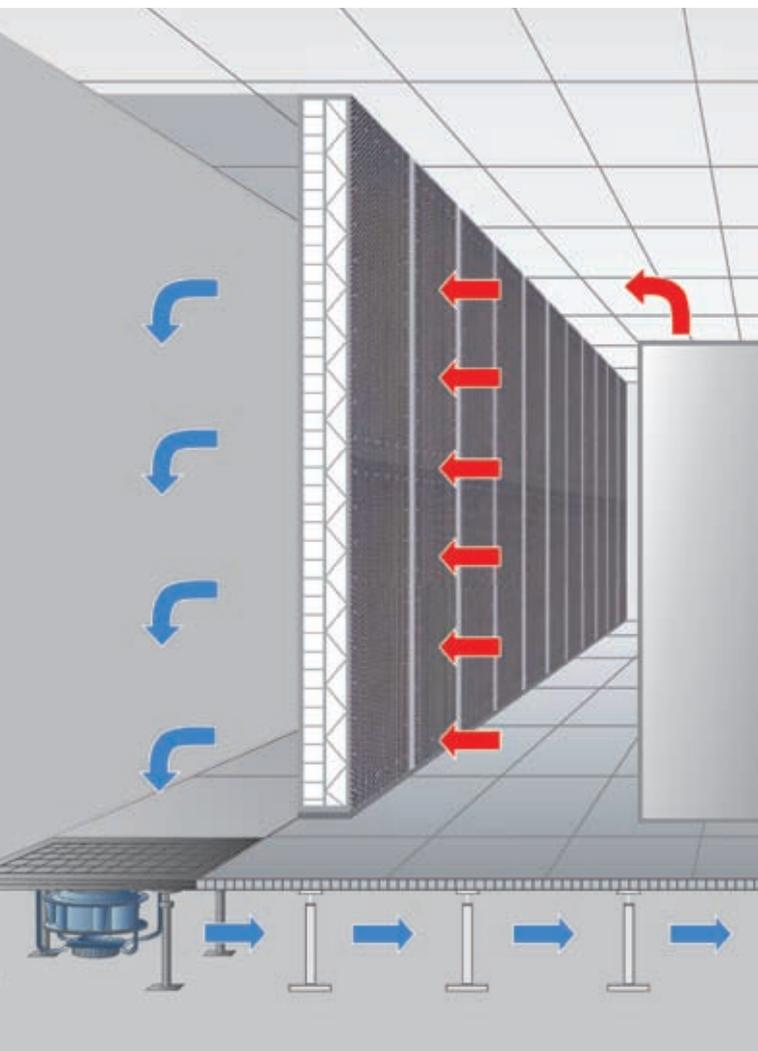
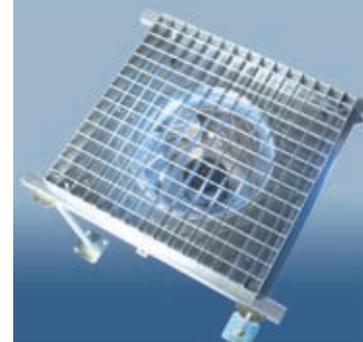
## A practical investment for your company

### Save energy

Cooling of the computer room can be precisely controlled through the design of the heat exchanger and number of fans. The drastic reduction in internal pressure losses is achieved as a consequence, resulting in a considerable drop in energy consumption when compared to air-conditioning cabinets. And the larger the cooling capacity required, the greater the saving achieved. [Investment costs are, in any case, lower than the new installation of precision air-conditioner units.]

### Create the space you need

The complete dispensing with air-conditioning cabinets means that considerably more space is available, and capacities can also be expanded without difficulty in consisting space concepts. The outlay for installation of the deltaclima CoolWall® can be compared somewhat to that of conventional air-conditioner units.



### The deltaclima CoolWall® principle

The deltaclima CoolWall® consists of a wall with a cooling and filter module encompassing a separate control and special energy-saving EC fans. The fans ensure that the required air flow is established behind the cooling wall. They force and filter the hot air out of the computer room through the cooling wall, conveying the cold air through the double floor back to the racks. In the contrary layout, the air flow selectively expels hot air through the double floor – and feeds in cold air through the cooling wall.

The generous heat exchange surfaces mean that higher water temperatures can also be employed. This enables the extended exploitation of external air during operation with indirect free cooling.

The deltaclima CoolWall® can be integrated without difficulty in the existing cold water mains network.

### The deltaclima CoolWall®

- Extremely high cooling capacity
- Extremely low energy requirement
- Extremely space-saving
- Extremely-flexible room layout
- Extremely favourable scalability
- Extremely investment-friendly

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## Flexibility over the entire surface Perfect for any room architecture

### The warm and cold room concept

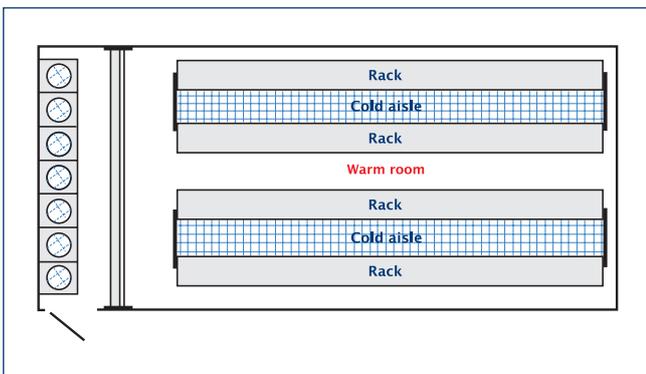
When it comes to cooling servers, the deltaclima CoolWall® is available in two versions: the warm room and cold room concept. The warm room concept involves the introduction of cooled air into the double floor and its conveyance via the perforated double floor plates to the rack suction points. The cooling air flows through the server cabinet at a temperature (for example) between 20 and 26 °C, absorbs the heat present and returns to the circuit via the cooling wall.

Air conveyance is reversed in the cold room concept. The air is fed into the room through the cooling wall and suctioned into the server. It absorbs the heat present here and returns to the circuit via the double floor.

At this, the complete room appears as „compensation room” and the IT staff is working in cooled environment.

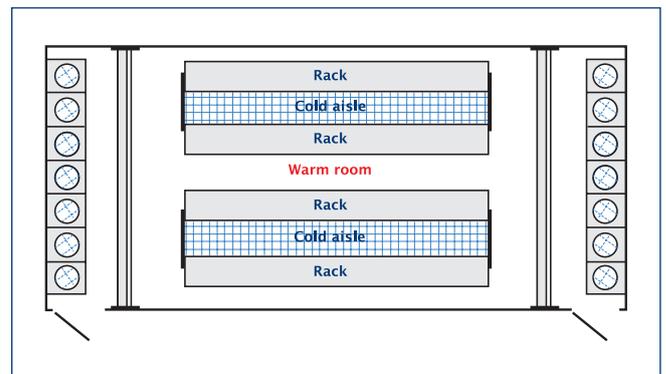
The deltaclima CoolWall® not only represents a space-saving solution because an air-conditioning cabinet is no longer required. Its installation is also completely flexible and, consequently, can be adapted to suit any room architecture. Different layouts can, in principle, be realised in all conceivable variants and dimensions.

The cooling surfaces of the deltaclima CoolWall® consist of modular components in two sizes (2,400 mm x 1,200 mm and 2,400 mm x 1,800 mm). This means that the entire wall surface of every computer room can be fitted, regardless of the room size.



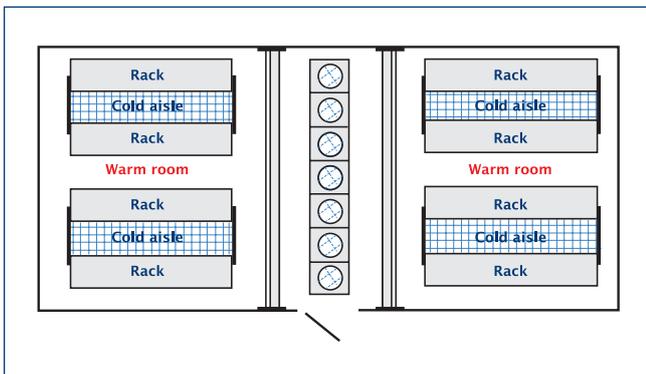
### Single-sided installation

The computer room is supplied via a deltaclima CoolWall® at the end wall.



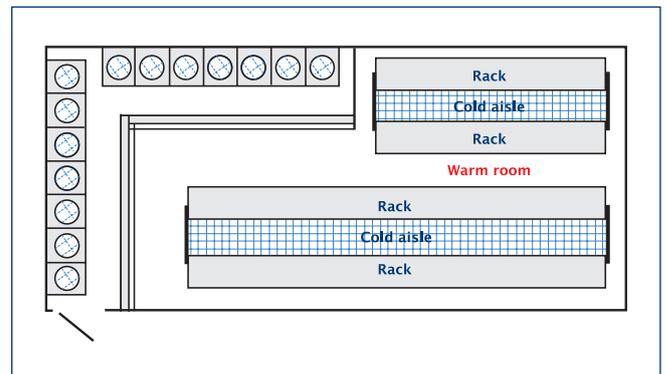
### Double-sided installation

The computer room is supplied via two deltaclima CoolWall® at both end walls.



### Central installation

Two computer rooms are supplied simultaneously via two deltaclima CoolWall® separated from each other.



### Corner installation

A computer room can also be supplied by two deltaclima CoolWall® units located in the corners if the end wall on its own is too narrow.

## Same area, twice the capacity

|                              | Conventional circulating air cooling unit                | deltaclima CoolWall®                        |
|------------------------------|----------------------------------------------------------|---------------------------------------------|
| Temperature air intake       | 30°C / 30 % r.h.                                         | 30°C / 30 % r.h.                            |
| Cooling water temperature    | 10°C /15°C                                               | 10°C /15°C                                  |
| Cooling capacities           | 6 x 156 kW = 936 kW                                      | 1,844 kW                                    |
| Heat exchange surface        | 6 x 3.84 m <sup>2</sup> = 23 m <sup>2</sup>              | 2.5 x 18 m <sup>2</sup> = 45 m <sup>2</sup> |
| Fans                         | 18 x                                                     | 42 x                                        |
| Air output at same air speed | 6 x 33,000 m <sup>3</sup> /h = 198,000 m <sup>3</sup> /h | 390,000 m <sup>3</sup> /h                   |
| Computer room area           | 48 x 20 m = 960 m <sup>2</sup>                           | 48 x 20 m = 960 m <sup>2</sup>              |
| Specific cooling capacity    | 0.98 kW/m <sup>2</sup>                                   | 1.92 kW/m <sup>2</sup>                      |

### SYSTEM COMPARISON

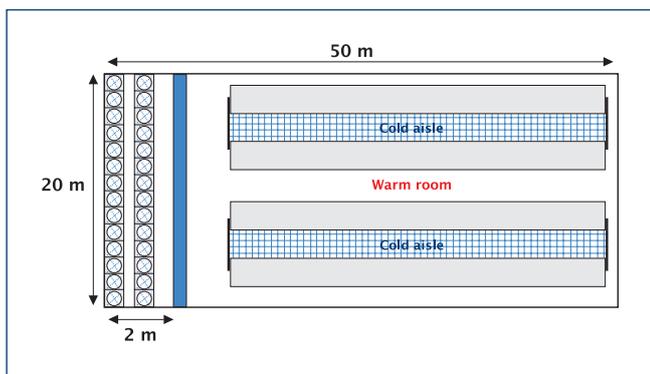
#### deltaclima CoolWall® and circulating cooling unit

An exemplary calculation based on a computer room with an area of 960 m<sup>2</sup> was made to compare the performance of precision air-conditioner units with the deltaclima CoolWall®. Seven precision air-conditioner units with service access and, alternatively, a deltaclima CoolWall® and 42 fans in the double floor were installed along the front wall on an installation surface of 20 m x 2 m in a computer room with a width of 20 m, a length of 50 m and a height of 2.6 m (above the double floor). The heat exchangers are fed with cooling water with a supply temperature of 10 °C and a return temperature of 15 °C. The air intake temperature in the heat exchangers is 30 °C.

The cooling capacity was calculated with the same temperature difference for both examples, while it was assumed that an air-conditioner unit is installed for plant operation (i.e. only six units were included in the calculation).

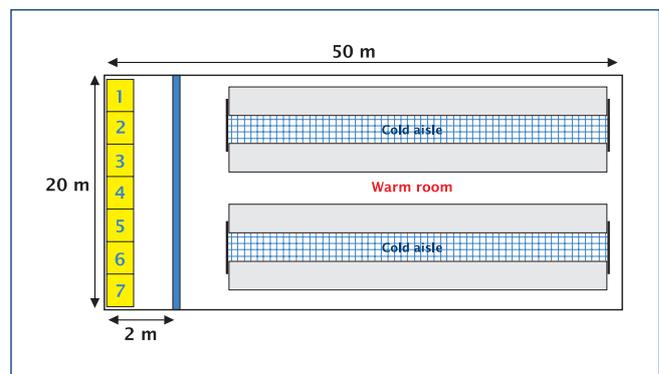
#### The result

The larger heat exchange surface enabled the deltaclima CoolWall® to achieve practically twice the specific cooling capacity in the same area when compared with conventional precision air-conditioner units. The deltaclima CoolWall® can dissipate around 1.9 kW per m<sup>2</sup> area, while the precision air-conditioner units can only barely manage 1 kW. It simultaneously saves energy and considerably reduces running costs.



#### deltaclima CoolWall® variant

Specific capacities dissipated: 1,844 kW/960 m<sup>2</sup> = 1.92 kW/m<sup>2</sup>



#### Conventional circulating cooling unit variant

Specific capacities dissipated: 936 kW/960 m<sup>2</sup> = 1 kW/m<sup>2</sup>

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## Technology in detail



### Housing

- Greater housing rigidity, thanks to the welded and painted design of the frame profiles
- Housing casing removable all round (side and rear panel thickness 1.5 mm in each case)
- Side visible in computer centre is perforated
- Electrophoretic dip priming and powder coating, RAL 9005
- Transportation with crane eyelets possible
- Innovative design
- Simple on-site dry construction wall installation



### Control / Regulation

- Separate switch cabinet for variable system control
- Actuation of air- and water-cooled refrigeration machine possible
- Actuation of fans via MOD bus
- Connection to central building control systems possible via BACnet, SNMP, Ethernet



### Filter

- G4 cartridge-type air circulation filter
- Fitted directly to heat exchanger
- Filter changing from front
- Filter seal replaced during filter changing
- Fiberplast frame
- Continuous filter monitoring through differential pressure sensor



### Cooling

- Room height cooling segments with large-surfaced Cu/Al heat exchanger
- Vane spacing > 2 mm, easily accessible for cleaning purposes
- Low velocity for reduced pressure loss
- Easy-to-clean condensate tray
- Internal cooling circuit pipework, including constant 2-way valve, optional 3-way valve
- Brass or gunmetal material
- Simple on-site connection



### Fan

- The fan motor unit is simply suspended in the double floor grid
- MOD bus networking means practically no limitation on number of fans
- High-performance radial fans, optimised efficiency, no volute casing, with backward inclined blades, single-sided suctioning
- Drive motor integrated as external rotor in impeller
- Fan speed is configured via EC control to suit the individual flow
- Replacement possible from above
- All electrical connections with plug connector

| <b>SERIES</b>                                                               |                   | <b>180.3 CW</b>  | <b>300.3 CW</b> |
|-----------------------------------------------------------------------------|-------------------|------------------|-----------------|
| Size                                                                        |                   | 12.3             | 18.3            |
| <b>RATED FLOW</b>                                                           |                   |                  |                 |
| Air volume                                                                  | m <sup>3</sup> /h | 18,000           | 30,000          |
| External compression                                                        | Pa                | 20               | 20              |
| <b>COOLING – cold water 7°C / 12 °C and air intake 24 °C / 50 % r. h.</b>   |                   |                  |                 |
| Cooling capacity, overall                                                   | kW                | 87.0             | 144.0           |
| Cooling capacity, sensitive                                                 | kW                | 68.0             | 112.0           |
| SHR <sup>1)</sup>                                                           |                   | 0.78             | 0.78            |
| Medium flow                                                                 | m <sup>3</sup> /h | 15               | 24.9            |
| Cooler pressure loss                                                        | kPa               | 29               | 26              |
| Valve pressure loss                                                         | kPa               | 33               | 38              |
| Connection                                                                  |                   | Rp 1 1/2         | Rp 2            |
| <b>COOLING – cold water 10 °C / 15 °C and air intake 26 °C / 45 % r. F.</b> |                   |                  |                 |
| Cooling capacity, overall                                                   | kW                | 71.0             | 119.0           |
| Cooling capacity, sensitive                                                 | kW                | 67,0             | 112.0           |
| SHR <sup>1)</sup>                                                           |                   | 0.94             | 0.94            |
| Medium flow                                                                 | m <sup>3</sup> /h | 12.3             | 20.5            |
| Cooler pressure loss                                                        | kPa               | 20               | 18              |
| Valve pressure loss                                                         | kPa               | 24               | 26              |
| Connection                                                                  |                   | Rp 1 1/2         | Rp 2            |
| <b>COOLING – cold water 12°C / 18 °C and air intake 28 °C / 40 % r. F.</b>  |                   |                  |                 |
| Cooling capacity, overall                                                   | kW                | 68.0             | 113.0           |
| Cooling capacity, sensitive                                                 | kW                | 68.0             | 113.0           |
| SHR <sup>1)</sup>                                                           |                   | 1                | 1               |
| Medium flow                                                                 | m <sup>3</sup> /h | 9.8              | 16.3            |
| Cooler pressure loss                                                        | kPa               | 13               | 12              |
| Valve pressure loss                                                         | kPa               | 16               | 16              |
| Connection                                                                  |                   | Rp 1 1/2         | Rp 2            |
| <b>COOLING – cold water 10°C / 15 °C and air intake 30 °C / 30 % r. F.</b>  |                   |                  |                 |
| Cooling capacity, overall                                                   | kW                | 92.0             | 153.0           |
| Cooling capacity, sensitive                                                 | kW                | 92.0             | 153.0           |
| SHR <sup>1)</sup>                                                           |                   | 1                | 1               |
| Medium flow                                                                 | m <sup>3</sup> /h | 16               | 26.4            |
| Cooler pressure loss                                                        | kPa               | 31               | 28              |
| Valve pressure loss                                                         | kPa               | 39               | 41              |
| Connection                                                                  |                   | Rp 1 1/2         | Rp 2            |
| <b>FAN UNIT</b>                                                             |                   |                  |                 |
| Type                                                                        |                   | EC motor         |                 |
| Number                                                                      | unit              | 3                | 5               |
| Power input, overall                                                        | kW                | 2.2              | 3.7             |
| Max. current input                                                          | A                 | 3.9              | 3.5             |
| Weight with double floor plate / fan                                        | kg                | 39               | 39              |
| <b>FILTER IN INTAKE</b>                                                     |                   |                  |                 |
| Type                                                                        |                   | Cartridge filter |                 |
| Filter class conforming to DIN EN 779                                       |                   | G4               | G4              |
| <b>SOUND DATA</b>                                                           |                   |                  |                 |
| Sound power level, suction side                                             | dB(A)             | 77               | 81              |
| Sound power level, pressure side                                            | dB(A)             | 80               | 84              |
| Sound pressure level in free field (2 m distance)                           | dB(A)             | 60               | 64              |
| <b>BASIC HEAT EXCHANGER MODULE</b>                                          |                   |                  |                 |
| Width                                                                       | mm                | 1,200            | 1,800           |
| Depth                                                                       | mm                | 350              | 350             |
| Height (above double floor)                                                 | mm                | 2,400            | 2,400           |
| Min. double floor height                                                    | mm                | 350              | 350             |
| Installation space                                                          | m <sup>2</sup>    | 0.42             | 0.63            |
| Weight                                                                      | kg                | 195              | 294             |
| Supply voltage                                                              | V/Ph/Hz           | 400/3/50         | 400/3/50        |

<sup>1)</sup> SHR = Sensible Heat Ratio

We reserve the right to make changes in the interest of technical progress.

ADVANTAGE: a width of 1,800 mm and cooling capacity of 153 kW results in a fan connected load of only 3.7 kW



Consulting and planning, production and delivery, installation and commissioning – you can avail of our service anywhere around the globe. In addition to this, we can also provide you with a thorough maintenance service, thus meeting prerequisites for maximum efficiency and performance and ensuring the optimum functional reliability of your air conditioning technology and a long service life.

As a TÜV-certified enterprise, we operate a quality assurance management system conforming to DIN ISO 9001 and adhere to standards compiled by the Maintenance Work Group of the Air-Handling Technology Association of VDMA (Association of German Machine and Plant Manufacturers): VDMA 24186.

Please call us. We will be delighted to help you locate the WKT partner closest to you.

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