

Case Study

weisstechnik realises tailor-made, efficient return air cooling for data centres

WHY

Growing demand in the colocation business with simultaneously increased heat loads in suites, specific cooling capacity: 3 kW/m²

HOW

Precision air-conditioning units with adapted dimensions and energy-efficient humidification/dehumidification

WHAT

56 Vindur® CoolMaster CW and 16 Vindur® CoolMaster CW/DX, with customised modifications

WHY - The challenge.

According to its own information, the Global Data Centers division of NTT in the EMEA region operates Europe's largest single data centre site at its headquarters in Frankfurt. The Frankfurt 1 campus provides 60,000 m² data centre space and a power capacity of 120 MW. In addition to the premises, e-shelter also provides the technical infrastructure, including air conditioning and security services.

Building H, the most recent addition to Frankfurt 1, has a power capacity of 7 MW and was opened in 2017. The heat load of the suites was originally designed as 2 kW/m². The increased computing power required an increase in the cooling capacity to 3 kW/m². With a size of 600 sqm per suite, this corresponds to a heat load of 1,800 kW, which must be removed reliably and energy-efficiently.



HOW - The idea.

In order to fulfil the increased cooling load requirements as efficiently as possible, large recirculated air coolers are completely adapted to the structural circumstances in building H. On the one hand, they must be larger in order to produce more output, and on the other hand they must still fit through the existing doors and in the service lift. They are connected to the chiller system on site.

In addition, innovative dehumidifiers are integrated for humidification and dehumidification of the IT areas. These operate according to the partial air flow principle and are therefore particularly energy-efficient.



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WHAT - The solution.

The tailor-made cooling solution is based on the diversely tried and tested standard units of the CoolMaster CW series with underfloor fan technology. The dimensions of the cold water units were optimally adjusted to the existing transport routes and room sizes, to achieve maximum performance on a minimum standing area.

Selected product: Vindur® CoolMaster CW, with customised modifications

Nine precision air-conditioning units were installed in each of the four suites to be equipped. The suites were additionally equipped with four humidifying/dehumidifying units each.

Implemented modifications

1. Increased cooling load and optimised dimensions
 - Unit dimensions: 2,300 x 2,550 x 1,100 mm (HxWxD)
 - Cooling capacity per unit: up to 255 kW
2. New humidifying/dehumidifying unit
 - Development of intelligent dehumidification technology through partial air flow, therefore 60% energy saving in DX operation compared to conventional solutions
 - Unit dimensions: 850 x 2,550 x 995 mm
 - Cooling capacity: 25 kW
 - Humidification capacity: 4 kg/h
 - Dehumidification capacity: 3,3 kg/h

