

**STULZ**

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## Expansion of a data center in Eindhoven with a STULZ custom-made solution.

In collaboration with Interconnect, PVM Logistiek, Isolatiebedrijf Berger, Van Kessel Installaties and Konstruktiebedrijf Hercules, STULZ has realized the cooling for the expansion of Interconnect's data center in Eindhoven.

STULZ was jointly responsible for engineering, supplying, assembling and installing six STULZ CyberCool 2 chillers and various STULZ CyberAir 3 units in the various data center rooms. In addition, STULZ developed a custom-made solution by placing six containers in which, among other things, the adiabatic cooling is housed.

### THE FACTS

#### Customer

Interconnect

#### Hardware

CyberCool 2 chillers

CyberAir 3 units

CAREL ChillBoosters

#### Task

Supply + Installation

Custom-made container solution

Adiabatic cooling

## THE CUSTOMER

Interconnect is a data center and cloud specialist and with two data centers in 's-Hertogenbosch and Eindhoven, Interconnect has a total data center floor area of 6,800 m<sup>2</sup>. Interconnect advises, supplies and manages extremely reliable hybrid IT infrastructure with the aim of providing various organizations with the right IT infrastructure.

STULZ and Interconnect have a partnership for many years now, from supplying maintenance technicians to the supply and installation of complete cooling installations and now the expansion of the data center in Eindhoven.

## THE CHALLENGES

The biggest challenge for this project was the complexity of the installation as a whole. Interconnect's wishes were clear: nine server rooms made up of three different cooling capacities, 400 kW, 800 kW and 1000 kW. The challenge here, was the uncertainty of the distribution of the server capacity in each server room. Ultimately it was decided to adapt the infrastructure in such a way that on the top two floors both the 1000 kW rooms and the 400 kW rooms could be realized if possible.

Initially, they wanted to realize a higher cooling capacity in the data center, unfortunately this was not possible due to constructive limitations. The limiting factor in this matter was the limited height of the floor itself.

It is very important that a data center is operational at any time, regarding cooling but also regarding electricity, because without electricity, cooling is not possible at all. Therefore back-up systems are very important. A data center must also operate as energy-efficient as possible, with the Return On Investment (ROI) being as high as possible.





## THE SOLUTION

To meet the above stated requirements, a total of six CyberCool 2 chillers from STULZ, each with a cooling capacity of 1200 kW, were chosen to place on the roof of the data center. In the server rooms, it was decided to use one type of STULZ unit (the CyberAir 3) in order to increase efficiency. In the 400 kW server rooms, the STULZ CyberAir 3 units provide a cooling capacity of 200 kW per unit, in the 800 kW and 1000 kW server rooms they deliver less than 200 kW per unit, however, more units will be installed to meet the requirements.

The CyberCool 2 chillers are all six equipped with the most energy-efficient components, including the option of Free Cooling mode. It is almost impossible to develop a more complete cooling unit.

The CyberCool 2 and the CyberAir 3 are the most energy efficient solutions in comparison with competitive solutions on the market. This translates into a visibly lower energy consumption. The ROI is high and the units ultimately pay for themselves completely. The total cooling installation contains three water-separated cooling systems, one of which can fail completely (the installations consist of N + 1).

This means that, for example in a 400 kW room, three STULZ CyberAir 3 units have been installed, each with a cooling capacity of 200 kW. This results in a total cooling capacity of 600 kW and each STULZ unit gets its cooling water from a different cooling system. If one STULZ unit should fail, the required cooling capacity will be realized by the other two STULZ units.

The same situation has been realized on the roof of the data center. Two chillers are connected to each cooling system and if even two chillers fail (whichever one), the cooling is still guaranteed in the entire data center.

The unique factor in the project is the choice to place six custom-made (sea) containers on the roof of the data center. Various components are housed in these six containers, including the buffer tanks, but also the adiabatic cooling of CAREL (ChillBooster units).

An advantage of adiabatic cooling is that the cooling capacity increases when the outside temperature rises, while this decreases with traditional compressor cooling. It cools the air before it reaches the chiller. For example, 100 litres of water supplies approximately 69 kW of cooling with only 0.25 kW of power absorbed by the pump. This ensures that energy consumption is reduced on the hottest days of the year. In addition, water as a refrigerant is completely environmentally friendly in contrast to traditional refrigerants.

Besides that, cost efficiency played a major role in the decision to place a part of the installation in six separate containers. In addition, a significant advantage was that the installations are better protected against, among other things, weather influences. By placing LED lighting in the containers, the service engineers can easily perform their work at any time of the day, including during the (dark) night hours.

This cooling installation is also equipped with the option of transferring the heat produced in the server rooms to, for example, a heat network in the future.



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