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Sprayed drycoolers for cooling server rooms

The company Grass-Merkur is a provider of data backup and storage services. As a result of demand, the number of available servers, i.e. the storage space, has been increasing for years. At the same time, the need for cooling and the requirements as regards cooling systems have grown too.

Horst Kutzinski, the owner of Wärme-Klima-Bad GmbH, is the systems engineer responsible for Grass-Merkur's systems and an all-rounder who takes care of all his customer's technical issues. "It all started with a cooling tower," he said. "As time went on, the need for cooling increased and a new system concept was eventually necessary. The operational safety and energy efficiency of the new system were particularly important. Naturally, it must be ensured that the servers are functional at all times, even if a component should fail. In order to work in the most energy-efficient manner possible, we were on the lookout for the latest technology."

After approaching Güntner for the first time, Mr Kutzinski learned of the new GFD drycooler with the innovative HydroSpray system. The GFD was exactly what he was looking for. After all, the system would spend most of the time in free cooling mode with spraying yet still provides the facility to switch to re-cooling in order to cope with peak loads. At the Chillventa, he then took a closer look at the device.

Overview

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| Line of Business: | Air conditioning |
| Application: | Air conditioning |
| Country/City: | Germany/Hanover |
| Fluid: | Water/Glycol |
| Product: | Drycooler GFD with HydroSpray |



▲ Systems engineer Horst Kutzinski (left) in conversation with Güntner sales employee Udo Brünjes



▲ Spraying can be controlled individually for all sections.

Given the level of cooling necessary in the computer centre, he ordered two 300kW GFD drycoolers, each equipped with 2 x 7 EC fans. And naturally the Professional version of the new HydroSpray system with the associated GHM Professional controller. "In order to set the power at precise levels, we can control and activate each spray nozzle individually," said Kutzinski. "The controller automatically recognises which spray sections have been operating for the most hours and then switches on the sections with the lowest number of operating hours first. Thanks to a water treatment system with a water softening and desalination unit, I can spray for up to 1,000 hours a year using the GHM Professional. Normally, free cooling with spraying is enough. We work with a standard glycol circuit. In order to prevent corrosion, we opted for epoxy resin coated fins. The devices were delivered completely mounted and wired." For the server rooms, three 150 kW coolwalls are available as inner units. As outer units, two water-cooled water chillers each with a cooling power of 250 kW and the associated Güntner GFD drycoolers with spraying are used.

The system's main operating mode is free cooling with spraying up to a drycooler outlet temperature of approx. 18 °C. At the same time, the return flow of the coolwalls is fed via pumps to the GFD drycoolers before being pumped to the forward flow of the coolwalls.

Up to an external temperature of approx. 21 °C, the system runs in mixed mode: the return flow of the coolwalls goes to the evaporator of the water chillers, is pumped to the drycoolers and is then pumped via the condenser of the water chillers to the forward flow of the coolwalls. The various operating modes are controlled by a complex valve system.

Because the devices were installed in a mixed-use area, the issue of soundproofing was important too. However, the GFD drycoolers easily meet the requirements with a sound pressure level of 49 dB(A) at 10 m. Even if additional devices are installed, this will not cause problems: "It is only a matter of time before we need to expand the system again," said Kutzinski.