

efficiency in food and energy processes.

Optimized equipment configuration reduces operational costs

Energy-efficient HVAC climate control of computer centers, with GEA Ultra-Denco close control systems

The new GEA Ultra-Denco Close Control HVAC systems by GEA Air Treatment ensure exact temperatures and humidity in climate control. They were especially designed for employment in computer centers. This equipment range includes three sizes with a maximum cooling duty of 50 to 150 kW. New configuration and optimization of components – heat exchangers, filters, valves, and especially fans – have enabled GEA experts to minimize air- and water-side pressure drops and consequently to reduce power consumption by more than 50 %. Further savings potential is offered by the combination of systems with chillers that offer free-cooling functions: for example, GEA GLFC.

The Close Control HVAC units in the GEA Ultra-Denco Range are available, as standard, with 6-row high-capacity cooling banks and with modulating 3-point servovalves in 2- or 3-way versions – and with EC free-running (plug) fans. As a result of their efficiency of more than 90 %, EC fans – especially in partial-load mode as, for example, with standby redundant features – enable reduction of power consumption by up to 45 % in comparison to systems with AC fans in full-load mode. Location of the fans in a raised floor radically reduces flow reversal losses and thereby reduces power consumption of the overall unit by more than 50 %.

Enlarged filter surfaces – with the resulting reduction in pressure drop – lead to longer maintenance intervals. The large heavy-duty heat exchanger with 6-tube rows is designed for greater output: or for operation with more energy-efficient media temperature while enabling the same output. By optimization of the components through which water flows – such as heat exchangers, valves, and piping – GEA Denco has succeeded in extremely reducing water-side pressure drop.

Since the fans in this configuration pull in air only through the unit itself, the enclosure is not under pressure and is characterized by great air tightness. This prevents leaks. Service staff have simple access from the front to maintain the system.

Monitoring the pressure – and maintaining perfect climate control

When used in high-capacity server environments, a control-system combination with an automatic pressure-controlled system (APC) provides exact monitoring and optimization of the pressure prevailing in the raised floor. This configuration always supplies the correct amount of air that is momentarily required. Pressure-dependent control allows further reduction of power consumption by the fans. These solutions also minimize the risk of so-called hot spots: i.e., areas in which high temperatures can develop in small areas. This GEA system operates particularly effectively in combination with cold- and hot-aisle containment.

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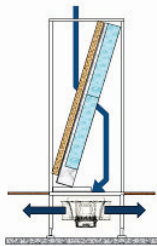
Free cooling opens up further potentials for saving

With cooling requirements over the entire year, one highly recommended solution is the combination of GEA Ultra-Denco Close Control HVAC units and chillers with free-cooling functions. As soon as these free-cooling systems can provide the water (or water-glycol mixture) 1 K below the required return-flow temperature, mixed operation is possible. At low air temperatures, it is often possible to switch off the compressor entirely: for example, during winter operation. This reduces compressor operation time and lowers power costs.



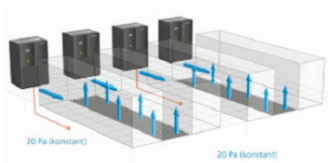
Photo: GEA_Ultra-Denco.jpg

The GEA Ultra-Denco Range assures exact temperatures and humidity.



Picture: GEA_Ultra-Denco_Ventilator.jpg

A new fan configuration allows optimization of operating costs of Close Control HVAC cabinets.



Picture: GEA_APC_System.jpg

The APC system provides constant pressure in the raised floor, up to the performance limit of the installed equipment.