

In-house CFD modelling of hot and cold aisle temperatures in a data centre



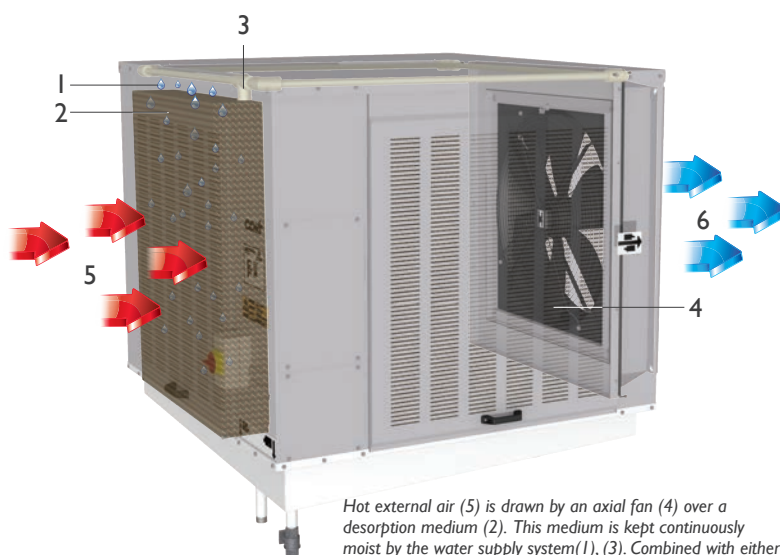
CoolStream S has been certified in accordance with the requirements of VDI 6022.

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## COOLSTREAM EVAPORATIVE COOLING SYSTEM

Colt's direct air evaporative cooling system takes full advantage of the free cooling power of a temperate climate. The free cooling air is regulated by recirculated server exhaust air with occasional evaporative assistance in the summer months. For approximately 95% of the year the system takes filtered outside air and carefully mixes it with warm recirculated server exhaust air to maintain temperature and relative humidity levels within the stringent AI standards of the ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Data Centre Thermal Guidelines. This is an extremely efficient system which also delivers the benefits of very high reliability. This is a direct result of its simple design and minimal component count.

- **Delivers annualised cooling PuE of 1.08:** The PuE is achieved using G4 filters and is maintained over a variable IT load.
- **Best in class:** Unique control system allows control of relative humidity levels following the evaporative cooling process.
- **90% efficient:** An evaporative cooling installation can consume less than 10% of the electricity used by an equivalent rated refrigeration based cooling system, consuming around 4kW of electrical energy for every 50kW of cooling capacity.
- **Environmentally friendly and safe:** CoolStream runs on fresh air and water only and requires no CFC or similar refrigerants, so no F gas compliance.
- **Air quality guaranteed:** Evaporative cooling involves supplying 100% filtered, fresh air in accordance with the ASHRAE guidelines. CoolStream uses G4 filtration as standard with an option for F7.
- **High quality components:** Industrial grade components make CoolStream the best in class.



Hot external air (5) is drawn by an axial fan (4) over a desorption medium (2). This medium is kept continuously moist by the water supply system (1), (3). Combined with either natural or mechanical ventilation, this can result in a great reduction in air temperature (6).



Typical ductwork layout showing two CoolStreams in tandem with re-circulation of air through a Coltair de-centralised air handling unit.