# Nominee: Vertiv

## Nomination title: Liebert® PCW High Chilled Water Delta T

**Liebert® PCW high chilled water delta T is a highly efficient floor-mount precision cooling unit designed to maximise freecooling operation, granting a proper air supply temperature to the servers. The unit, moreover, allows for maximum cooling capacity while minimising operating costs.**

**The unit's design has a water regime of 20°C / 32°C, with an airflow of 35°C on the return side and an air supply temperature between 24°C and 25°C. This system leverages on freecooling almost all year round with a solution that grants the complete separation of the external and internal ambient air, thus significantly reducing the overall system's power consumption. Additionally, the increased delta T reduces water flow, further saving energy on the pumping system and allowing for the sizing of any component related to the water flow.**

**Currently, there is no competitor with a unit that works at such a high delta T in their portfolio. This new operating point represents a challenge for the internal air conditioning units, as the speed of water is greatly reduced and the heat exchange factor differs significantly compared to past applications.**

**Liebert PCW can be optimised even further when integrated with Liebert AFC, our adiabatic freecooling chiller, and optimised for high water regimes. In fact, Liebert AFC's innovative design has been optimised for applications following the new American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards in terms of temperature requirements based on the development of new servers, ensuring maximum efficiency with return chilled water temperatures of up to 32°C with screw compressors. The inlet chilled water temperatures of up to 32°C maximise freecooling capacity all year round with a 30% increase when compared to similar products offered on the market. The 'extra freecooling' version provides a further 20% increase in capacity, which translates to a significant reduction in energy consumption and a pPUE as low as 1.06. Furthermore, the newly designed electronic control, found in Liebert AFC, optimises running costs by continuously calculating the sum of water and energy costs, subsequently implementing the most efficient combination of adiabatic, freecooling or mechanical cooling mode based on varying working conditions. Both Liebert AFC and Liebert PCW high chilled water delta T have thus been developed to provide an efficient solution to these new challenges.**

**Moreover, Liebert PCW ad hoc coil design is ideal for water and glycol operations and its top door grill exploits the entire coil surface, thus optimising the overall heat exchange. The unit has been designed to function with these strict operating regimes, respecting the ASHRAE recommendation,**

**which maximises the freecooling operation and optimises the overall energy consumption of the entire chilled water system. Liebert PCW is thus the answer to the latest and future data centre needs.**

**A system that uses our Liebert AFC adiabatic freecooling chillers, together with our newest Liebert PCW room cooling units, aisle containment and dynamic optimisation of the chilled water system, can reach a pPUE of 1.08 when considering a room set point of 22°C and 50% relative humidity in front of the servers, with water temperatures between 18°C - 24°C. This is a significant advantage compared to a legacy solution, which could reach pPUE values of 1.30.**

**Like Liebert AFC, Liebert PCW's development has also been conceived and developed exclusively by our R&D teams. The Thermal Management product development, which was initiated back in 2016, has targeted the need for high chilled water delta T and maximum cooling capacity in data centre applications. Unit validation has been completed via detailed tests on the first prototypes in the Floor-Mount Validation Lab, part of the Thermal Management Customer Experience Centre based in Padova, Italy. This testing facility can balance a thermal load of up to 200 kW with a chamber air temperature between 0°C and 60°C, providing customers with the most complete testing area to experience the capabilities of our technologies at peak conditions.**

**What's more, in September 2017, we also inaugurated the latest Adiabatic Freecooling Chiller Lab within our Customer Experience Centre. Unique in its class, the facility now counts six innovation labs all in one site, each dedicated to a different cooling technology. In addition to continuous R&D and product testing, the Centre is designed to introduce existing and prospective customers to the Vertiv Thermal Management portfolio, and experience first-hand a wide variety of technologies to help them evaluate which are most suitable for their specific needs.**

**Supported by constant consultation from R&D and engineering specialists, customers visiting the Centre from around the world can witness the most comprehensive range of cooling equipment – from chilled water technologies to pioneer innovations – all under one roof. The latest Adiabatic Freecooling Chiller Lab provides the unique opportunity to test cooling units up to 1.5 MW in extreme operating conditions between -10°C and +55°C degrees, ultimately measuring performances with full transparency. With the addition of the new lab, the Centre has the exceptional ability to simulate any partial load at infinite test points up to an unrivalled 5 MW of total capacity – a worldwide first in the field of data centre cooling.**

## Why nominee should win

- **Liebert® PCW high chilled water delta T design improves the efficiency level of a chilled water system and maximises freecooling operation all year round**
- **The system can be optimised even further when integrated with Liebert AFC, our adiabatic freecooling chiller and optimised for extremely high water regimes**
- **This solution is unique in the market**

- **The unit can be pre-tested before shipment at any peak condition at our Vertiv Customer Experience Center in Padova, Italy**