

ABOUT THE COMPANY

Pier DC is a co-location data centre located within the industrial area in Canning Vale, Western Australia, 20 kilometres from the Perth CBD. It is one of the region's most modern data centres, designed, built and tested to Uptime Institute Tier III standards.

Case Summary

Location: Australia

Vertiv Solution:

- Liebert® AFC™
- Racks
- Liebert® CRV 300mm/600mm
- MPH2 PDU's

Critical Needs:

Pier DC was designed to achieve energy efficiency targets of <1.45PUE alongside ASHRAE's (American Society of Heating, Refrigerating and Air Conditioning Engineers) recommended environmental targets for cold aisle containment and moisture limits.

"During the initial design scope, we noticed that there was a discrepancy between the solutions we could find on the market: either maximum efficiency with pure adiabatic freecooling solutions or higher availability solutions such as freecooling chillers. We were looking for a solution that could provide 100% cooling availability under all conditions within a single product – Vertiv was able to provide this solution," said Albert Wong, engineering manager, Pier DC.

With the aim of increasing the energy efficiency of next generation data centres while keeping cooling availability at its highest, Pier DC installed Vertiv latest chiller product, the Liebert® AFC™, which features adiabatic free cooling operation in an integrated package. This technology provided the customer with maximum energy efficiency, together with the 24/7 availability of multiple scroll backup compressors.

Liebert® AFC™ solves at once two major problems faced by today's data centre operators: reducing energy consumption and maintaining maximum cooling performance.

PIER DC

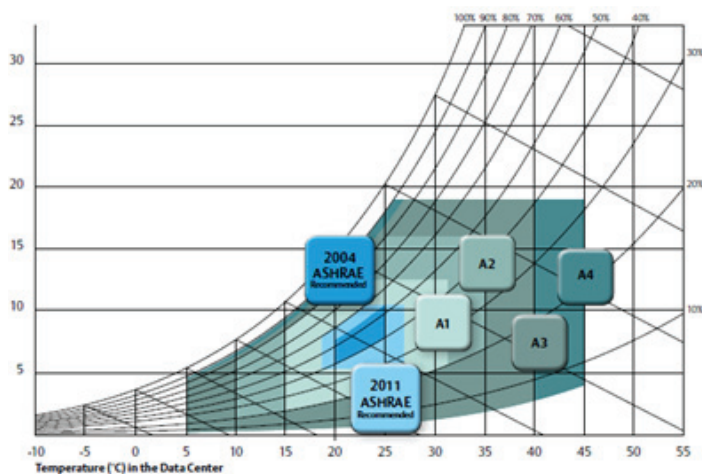
A Vertiv Case Study

Situation:

During the design phase, Pier DC aimed to be the region's most efficient data centre, while meeting the demands of its high-profile clients. One of the areas it was looking to optimise was its cooling infrastructure. Recognising that cooling accounts for one of the highest data centre energy spends, the customer was looking for a solution that would address this while still providing the optimal performance needed to support its customers.

The Solution

The Liebert® AFC™'s adiabatic and free cooling design is optimised for applications that benefit from ASHRAE's expanded environmental envelope, which prompts the use of chilled water at a higher temperature – 15 - 20°C in the case of Pier DC. The high return water temperature, when combined with adiabatic pre-cooling, guarantees maximum availability of free cooling and highest efficiency.



*The American Society of Heating, Refrigerating and Air Conditioning Engineers establishing guidelines relating to HVAC systems.

The Liebert® AFC™ was selected to provide full cooling capacity at Perth's peak design ambient in WET mode, thereby saving on chiller footprint and genset size/costs by leveraging the adiabatic cooling effect.

Additionally, the Liebert® AFC™, with its fast start ramp feature, ensures 100% cooling capacity 70 seconds after a power failure, while its multi-scroll compressors ensure 100% cooling capacity up to 43.6°C ambient temperatures.

Other features including ultra quiet EC fans, electronic expansion valves and micro-channel condensing coils all working together to deliver industry leading efficiency and performance.

The Liebert® iCOM controls provide state-of-the-art control operation for the system through intelligent energy and water management logic. The control system collects information from the different units' key parameters and operating modes (adiabatic, freecooling and mechanical cooling) while taking into account water and electricity costs. The control predictively calculates and then implements the combination, which optimizes operating costs.

Mark Deguara, director, data centre solutions, Vertiv in Australia and New Zealand, says: "Recent market trends have seen an increase in operating temperatures under which new IT equipment operates. This has led to customer interest in adiabatic solutions, extending freecooling availability to higher ambient temperatures. This is a highly efficient solution which maximizes freecooling availability in warmer climates for longer periods of time and guaranteeing continuous availability even under extreme ambient conditions that are typical in Western Australia."

Liebert® AFC™ Operating Modes

FREECOOLING

Only fans are needed to operate: direct exchange between water and air.



ADIABATIC FREECOOLING

The adiabatic system allows freecooling to operate at higher ambient temperatures.



HYBRID COOLING

Adiabatic freecooling is the primary cooling source, multiple scroll compressors are used as back up.



ADIABATIC MECHANICAL COOLING

Compressors's efficiency is increased by the adiabatic system.



SAFE MODE

100% availability also during water shortages; the sole mechanical cooling system will guarantee full load.



The Outcome

Selecting an adiabatic free cooling chilled water solution utilising the latest technologies in a fully integrated product such as the Liebert® AFC™ allowed Pier DC to deliver high reliability and efficiency for their business.

Pier DC were able to improve on their initial PUE targets due to the integration of the three cooling technologies (adiabatic + freecooling + compressors). Efficiency and performance is further optimised at part load.

Intelligent controls that constantly monitor system operation to find the most efficient combination between water and electric power consumption in order to reduce total running costs, further differentiates the Vertiv solution from hybrid designs available in the market.

Albert says, *“The Vertiv solution was critical in achieving the highest level of efficiency for the data centre while also meeting Uptime Institute Tier III reliability standards.”*

“We are pleased to award Pier DC with the Uptime Institute Tier III Concurrently Maintainability Facility Certification,” said John Duffin, Managing Director, South Asia for Uptime Institute. *“The awarding of the Tier III Certification award shows that each capacity component and element within the distribution paths can be removed from service on a planned basis without impact on the critical environment. Uptime Institute Tier Standards are based on a robust set of unbiased, consistent standards representing a worldwide consensus on best practices, infrastructure capability, and operating sustainability.”*