



CASE STUDY

University of Adelaide



University of Adelaide Goes Green

THE UNIVERSITY OF ADELAIDE IS CONSIDERED SOUTH AUSTRALIA'S MOST PRESTIGIOUS UNIVERSITY AND IS CONSISTENTLY RANKED IN THE TOP 1% OF UNIVERSITIES WORLDWIDE. THE UNIVERSITY WAS FOUNDED IN 1874, EMPLOYS 3,159 STAFF, CATERS TO APPROXIMATELY 25,000 STUDENTS PER YEAR AND CURRENTLY HAS 130,000 ALUMNI WORLDWIDE.

The University of Adelaide set a goal to provide their students with the best on-campus experience. After receiving feedback from the students it was found that there was a strong desire for a central learning environment that provided access to the complete range of required resources. There was also a desire for a central location to receive advice and assistance. This feedback birthed the concept of Hub Central, a learning environment with immediate access to resources and assistance. The theme of the Hub is to provide a natural learning environment that

mimicked the outdoors. The roof is made from a transparent plastic to provide as much natural light in as possible and 100% outdoor air is used to condition the facility.

Conditioning 100% outdoor air is no easy task for conventional refrigerated air conditioning equipment due to the high temperatures that the Adelaide summer can reach. Climate Wizard on the other hand thrives in hot and dry climates.

At design ambient conditions of 45°C (113°F) dry bulb and 21°C (70°F) wet bulb, the Climate Wizard air handling unit will deliver a supply air temperature of 17°C (63°F) dry bulb at a fraction of the power that a refrigerated air conditioner would use, as the Climate Wizard utilises evaporative cooling rather than a refrigeration cycle. It was on this basis that Climate Wizard technology was selected.

For a facility of this size, 35,000 l/s (74,160 cfm) of conditioned air was needed to provide a comfortable environment during summer. To provide this quantity of

conditioned air a pressurised air handling room was built above the learning hub. The room houses the central air conditioning equipment and provides easy access for maintenance.

Due to the massive quantity of outside air, 11 purpose built Climate Wizard modules were designed and built to meet the requirements of this application and all equipment is located within the air handling room. Each module consists of a bank of eight cores (4 wide x 2 high) installed into a stainless steel housing along with the core watering system. The ducting for the exhaust air for each core was also designed into the stainless steel housing so the wet exhaust air could escape out of the top of each module.

The cores in the high volume modules are the same as the cores in the packaged commercial Climate Wizard range. The 11 custom built modules have an equivalent cooling capacity of 30 Climate Wizard CW-H15 commercial air conditioners. For this high air volume application the custom built modules provided an efficient use of floor area when compared to standard units.

The result

Two years after the commissioning date the central Climate Wizard air conditioning system has not skipped a beat. The University Plant Engineer is full of praise for the Climate Wizard system and for the comfortable and fresh conditions maintained during the hot Adelaide summer. The students as well appreciate the openness and cool comfortable environment in which to study and relax.



Above: Inside the purpose built containment area that houses the high volume modules (at left) and the fan wall (at right).

Below left: One of the stainless steel modules that houses eight heat exchange cores.

Project information

Installation

System	11 x CW-HVM
Cooling Capacity Max	465kW
Input Power at 90kW	38.7kW
COP (EER)*	12 (41)
Power Saving Compared to Chiller System	73.5%

*Average summer conditions

Benefits

- ✓ EXCEPTIONALLY LOW COST OF OPERATIONS, WITH AN AVERAGE COP OF 12 (EER 41)
- ✓ SOLID "GREEN" CREDENTIALS
- ✓ NO CFC OR OTHER HARMFUL REFRIGERANTS
- ✓ FRESH AIR ALL YEAR ROUND
- ✓ LOW MAINTENANCE COSTS AND LONG LIFE EQUIPMENT



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