



Optimised HVAC Solution for Basketball SA Sports Centre.

Basketball SA Wayville, SA

Project Address

Wayville, Adelaide SA

Consultant

Lucid Engineering
Consulting

Installer

Diverse Mechanical

Equipment

8 x Climate Wizard Indirect Direct Evaporative
Single Pass Air Conditioning Units

Model: Climate Wizard **CW-X4**

CUSTOMER PROFILE

Basketball SA boasts with FIBA Level 1 courts, supporting local, district, state, and national league teams. The home of Basketball SA, SA Country Basketball, SA Wheelchair Basketball, SA Church Basketball, and Adelaide Lightning.

INDUSTRY

- Sports Arena
- Indoor Stadium
- Community Hall
- Events Facility

APPLICATION

- Stand-alone cooling
- Dedicated Ventilation
- Integration
- BMS Interface

The \$17.2 million extension of the Wayville Sports Centre, located at the Adelaide Showground, has expanded its facilities from three courts to seven, making it a premier venue. The courts comply with International Basketball Federation (FIBA) Level 1 standards, ensuring top-tier quality for sports events.

This facility serves as the home for Basketball SA, SA Country Basketball, SA Wheelchair Basketball, and SA Church Basketball programs. Additionally, it functions as the training base for the Adelaide Lightning, Adelaide's Women's National Basketball League team. Beyond training and competition, the center caters to local, district, state, and national league teams and includes a sensory room designed to support individuals affected by sensory sensitivities.

Project Requirements

The expanded facility posed several challenges that required a robust and carefully designed HVAC solution to meet the demands of players, spectators, and operators:

- **High Cooling Capacity:** The high-intensity activity levels in basketball courts necessitated a total cooling capacity of 580kW to mitigate heat buildup.
- **Energy Efficiency:** Minimizing operational costs through systems with a high Energy Efficiency Ratio (EER) was critical.
- **Ventilation:** Maintaining indoor air quality and optimizing system efficiency demanded adequate ventilation of 15,000 l/s.
- **Noise Reduction:** Quiet operation was essential to avoid disrupting games and training sessions.
- **Flexible Control:** The HVAC system needed to allow flexible control of individual units and centralized management for optimal performance.
- **Reliability:** Ensuring continuous operation during events required reliable and easily maintainable systems.
- **Space Constraints:** Limited roof space meant the HVAC units had to be compact and efficiently designed.

Proposed Solution

To address these requirements, the solution implemented was the installation of 8 Indirect / Direct evaporative Climate Wizard CW-X4 units. Key features of the system included:

- **Efficient and Optimal Performance:** 8 x CW-X4 units were capable of providing cooling and ventilation in excess of the requirements.
- **High-Performance PLC Controllers:** These provided localised control and simplified maintenance while integrating seamlessly with the facility's Building Management System (BMS). This allowed centralized control and optimization tailored to the facility's unique needs.
- **Compact and Slim Design:** The CW-X Series's space-saving design accommodated the limited roof space and aligned aesthetically with the modern facility.
- **Enhanced Serviceability:** The design facilitated safe and easy access for servicing, even with restricted space around the units.



The Outcome

The Climate Wizard HVAC system has delivered impressive performance and operational benefits:

Performance During Temperate Weather: The system functions efficiently during day-to-day operations, particularly in temperate conditions. Units are pre-programmed to start at 5 am on weekdays and 7 am on weekends, effectively mitigating heat buildup before peak occupancy.

Comfort in Extreme Heat: Even during extreme temperatures exceeding 40°C, the system performs admirably. While participants naturally feel warm during intense activity, feedback highlights their appreciation for the cooling effectiveness. Minor challenges, such as frequently opened double-height entry doors, occasionally impact overall climate control.

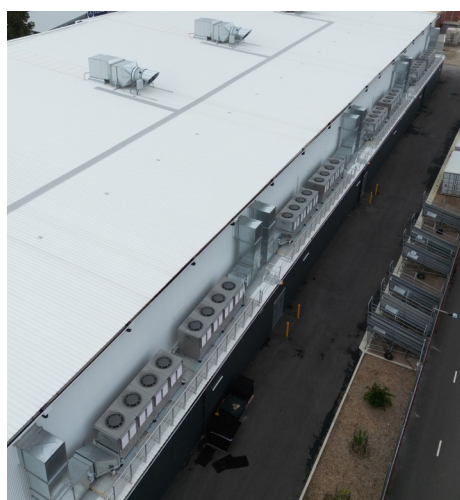
Participant Feedback: Players and spectators have been impressed by the consistent indoor comfort, especially during Adelaide's intense summer heat.

Reliability and Management: The units have proven reliable and user-friendly. Operators noted significant improvements in operational efficiency, particularly with the timer function. Continuous fine-tuning over the coming seasons is expected to further optimize performance.

By addressing critical requirements and overcoming space constraints, the Climate Wizard HVAC system has set a benchmark for HVAC solutions in high-performance sports facilities, ensuring comfort and efficiency for all stakeholders.

ASHRAE 0.4% Monthly Conditions (Wayville Design Conditions) - Ambient - 37.7 °C DB / 19.0 °C WB / Indoor - 22.0 °C DB / 50% RH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DB	41.7°C	39.7°C	37.5°C	32.4°C	25.6°C	20.9°C	19.8°C	23.7°C	28.0°C	33.4°C	37.3°C	40.0°C
WB	19.9°C	20.6°C	18.6°C	16.9°C	14.3°C	13.4°C	11.6°C	12.8°C	14.5°C	16.0°C	18.1°C	19.1°C
DP	5.5°C	9.4°C	5.6°C	5.7°C	5.3°C	7.7°C	4.3°C	3.1°C	3.2°C	1.5°C	4.2°C	4.6°C
8 x Stand alone Cooling I IDEC CW-X4 (5,100 L/s @ 100Pa Max. ESP) - Projected Performance												
CW-X4 Supply Air Temp	17.4°C	18.6°C	16.5°C	15.3°C	13.3°C	13.0°C	11.0°C	11.8°C	13.2°C	14.1°C	15.9°C	16.7°C
Stand Alone Cap	496.8 kW	435.2 kW	541.6 kW	603.2 kW	707.2 kW	725.6 kW	825.6 kW	784 kW	715.2 kW	669.6 kW	571.2 kW	532 kW
Stand Alone COP	8.7	7.7	9.5	10.6	12.4	12.8	14.5	13.8	12.6	11.8	10.1	9.4



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