



Indirect evaporative air conditioner 100% outside air



SEELEY
INTERNATIONAL 

About Climate Wizard

Climate Wizard is an air conditioner that uses an indirect evaporative heat transfer core that provides hyper-efficient cooling of outside air. It delivers 100% fresh, cool, outside air, with greatly reduced energy consumption. Climate Wizard is a proven technology that has been adopted across the world.

Climate Wizard's hyper-efficient benefits

- **Improved IAQ (indoor air quality) with 100% outside air**

In stand alone applications, 100% outside air means better indoor air quality and reduced incidence of "sick building" syndrome. The Climate Wizard cooling system will far exceed the regulatory standards for outside air ventilation rates, as Climate Wizard can supply 100% fresh outside air all the time.

- **Reduced running costs**

Climate Wizard can use up to 80% less energy than an equivalent refrigerated system performing the same duty, thanks to the unique indirect evaporative heat exchange core technology.

- **No moisture added**

Climate Wizard does not add any moisture to the supply air and can cool the supply air to several degrees below the ambient wet bulb temperature, which means it can be used in a very wide range of geographic locations.

*Climate Wizard Supercool (indirect/direct option) adds a small amount of moisture to the supply air.

- **Total cooling performance increases when air temperature rises**

With Climate Wizard, total cooling performance increases as temperatures increase. This does not happen with refrigerated air conditioning, which shows reduced cooling capacity as temperatures rise.

- **Reduce the energy use and improve the cooling performance of existing refrigerated systems**

Climate Wizard can be used on its own or in combination with refrigerated systems to dramatically reduce energy usage by pre-cooling outside air. Used with refrigerated systems, it can also extend the life of the air conditioning equipment.

- **Reduced electrical kW demand**

When summer cooling loads increase, the electrical demand from refrigerated cooling systems also increase; leading to higher electrical demand charges.

In contrast, a Climate Wizard's electrical demand remains steady even in hot weather, helping you control your electrical demand charges.

- **Ideal for use as a DOAS (dedicated outdoor air system), data centres cooling, or for comfort cooling applications**

Climate Wizard cools the air to conditions suitable for data centres, including class A1 data centres, at ultra-low PUE's (power usage efficiency).

- **Flexible design and engineering configurations**

Climate Wizard is easy to retrofit into existing buildings with refrigerated air conditioning plants, as well as brand new projects in a variety of configurations.

- **Savings on the installation costs**

In some countries, the cost of installing a Climate Wizard on a new building can be up to 30% cheaper compared to installing VRF (variable refrigerant flow) equipment.

- **Wiser use of water (R-718)**

Climate Wizard is the best technology available to take full advantage of environmentally friendly R-718. It produces high quality cooling at high electrical efficiencies.

- **No synthetic refrigerants or chemicals to harm the environment**

Climate Wizard does not require any additives to maintain cooling performance. Also, it uses water sparingly, so it does not require large amounts of water to operate.

- **Simple, reliable solution to improve COP / EER (coefficient of performance / energy efficiency ratio) and to meet various regulatory requirements**

Whether it's airflow, pressure, cooling capacity, or efficiency, Climate Wizard tops them all. At Seeley International, Australia's largest manufacturer of cooling and heating solutions, and the leader in developing energy-efficient cooling technologies, we rigorously test all of our energy efficient products, to ensure they surpass all relevant standards.

- **NATA (National Association of Testing Authorities) accredited laboratory**

Seeley International is Australia's only air conditioning and heating manufacturer with a NATA accredited test laboratory. NATA provides assessment, accreditation and training services to laboratories and technical facilities throughout Australia and internationally.

Climate Wizard product range

Climate Wizard is the global leader in delivering hyper-efficient cooling technology that covers an exceptionally large range of flexible configurations in a wide range of industries.

All Climate Wizard installations are fully supported by our experienced team of Climate Wizard design consultants and engineers to achieve the best result for your specific application.

Climate Wizard - indirect evaporative air conditioning

Dramatically reduces energy consumption and cooling costs compared to equivalent refrigerated systems



CW-H10

- COP of up to 15
- Up to 20 kW of cooling capacity in outside air pre-cooling applications
- Up to 800 L/s (2,880 m³/h) supply air



CW-H15

- COP of up to 15
- Up to 27 kW of cooling capacity in outside air pre-cooling applications
- Up to 1,100 L/s (3,960 m³/h) supply air



CW-80

- COP of up to 15
- Up to 146 kW of cooling capacity in outside air pre-cooling applications
- Up to 6,400 L/s (23,000 m³/h) supply air



CW-160

- COP of up to 13
- Up to 264 kW of cooling capacity in outside air pre-cooling applications
- Up to 11,800 L/s (42,480 m³/h) supply air

Climate Wizard Supercool - indirect evaporative cooling with direct evaporative stage

Offers even more hyper-efficient benefits delivering lower temperatures and extremely low operating costs



CW-H15S

- COP of up to 26
- Up to 47 kW of cooling capacity in outside air pre-cooling applications
- Up to 1,700 L/s (6,120 m³/h) supply air



CW-80S

- COP of up to 18
- Up to 182 kW of cooling capacity in outside air pre-cooling applications
- Up to 6,400 L/s (23,040 m³/h) supply air

Climate Wizard Supercool winery configuration - indirect evaporative air conditioning for wine barrel storage rooms

Designed to maintain precise temperature and humidity levels – at very low operating costs



CW-H15S winery configuration

- COP of up to 18
- Up to 32 kW of cooling capacity in outside air pre-cooling applications
- Up to 1,100 L/s (3,960 m³/h) supply air

flexible configurations in
a wide range of industries

Note: Nominal cooling capacity is based on design conditions of 36.1 °C db / 17.8 °C wb. Stand alone cooling capacity may be lower, depending on application.

Climate Wizard's unique design and performance features

Indirect heat exchange core

- Patented Climate Wizard counter-flow heat exchanger
- Uses indirect evaporative cooling to keep added moisture separate from the supply air stream
- Designed for long service life and consistent performance
- Provides maximum efficiency



Supply air fan and electric motor

- Backward curved, direct drive, plug fan
- Variable speed ECM (electronically commutated motor) for maximum energy efficiency
- Ultra-quiet, vibration free



Supply air pressure damper

- Regulates air pressure in the discharge plenum
- Used to control exhaust flow in the wet channels
- Provides simple, positive capacity control



*Applicable to CW-H10 and CW-H15 models only.

Tornado® water pump

- Australian designed and manufactured
- Exceptional reliability under all conditions
- Includes 'clever impact start' feature that will overcome any tendency for the pump to become locked up with residue during prolonged off periods
- The strong synchronous motor has constant speed, independent of voltage fluctuations, and runs very cool for long life



Water reservoir

- One piece moulded polymer construction
- Durable and corrosion free
- Provides excellent sound deadening properties
- Sloped to prevent standing water when drained



Water management system

- Custom designed water management system minimises water consumption and maximises cleanliness
- Continuously monitors and controls the water salinity level in the reservoir
- Controls water cleanliness using a factory installed electro-chlorinator
- Manages water distribution for minimum water consumption and maximum cooling efficiency
- Drains the water system during prolonged idle periods
- Alarms if low water levels are detected



Automatic drain valve

- Part of the water management system
- Controlled to manage water quality and maximise system efficiency
- Drains the reservoir during prolonged idle periods



Climate Wizard Supercool

With Climate Wizard Supercool, the moisture content can be fine-tuned to specifications, required for different applications, from data centres to wineries.



Chillcel high efficiency evaporative pad

- High efficiency, direct-evaporative cooling pad
- Produces an ultra-low leaving air temperature with minimal additional moisture
- Designed to maximise the space cooling capacity of Climate Wizard Supercool
- Increases supply airflow

Drip tray

- Part of the independent water collection system for the direct evaporative section
- Corrosion free and self-draining



Water distributor

- The water distributor delivers a calibrated volume of water to efficiently Supercool the unit's leaving air
- A dedicated pump and water distributor are used to independently water the direct evaporative media to maximise versatility
- The system uses tried and true technology, developed over many years by Seeley International
- Designed to prevent clogging and evenly water the direct evaporative media



CW-H15

Cabinetry

- Powder coated, marine grade aluminium
- Weather proof and corrosion resistant
- Mechanical fasteners are stainless steel or aluminium

Filter system

- Intake air is filtered through replaceable pleated filters
- The assembly includes:
 - a safety screen to protect the fan
 - a cover to minimise intrusion of rain



Wall controller

- Wall controller and a 20 m plugged control cable, factory supplied
- Can be configured for thermostatically controlled VAV (variable air volume) cooling or constant volume cooling
- Configured to respond to BMS (building management system) start-stop inputs applied at the unit controller
- Can be replaced by direct BMS inputs applied directly to the unit mounted control board



Electronic control module

- Advanced electronics programmed for maximum efficiency
- Controls unit operation to minimise water consumption and maximise efficiency
- Can be configured to accept external BMS system inputs to control system operation (while retaining control of water management and system efficiency)
- Smart, reliable, durable





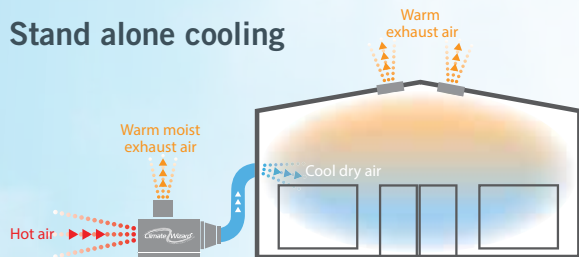
CW-160

"Climate Wizard is using an astounding 80% less energy. This was the perfect solution. There was nothing else that works as well as this has worked. There's nothing else out there."

- Joe Walton, Facilities Manager, Tri Tool Inc (USA)

Climate Wizard can be used in diverse configurations and a range of applications:

Stand alone cooling



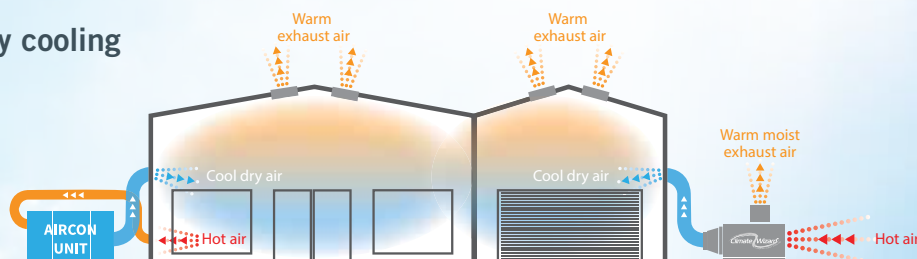
Climate Wizard used to provide stand alone cooling.

Pre-cooling



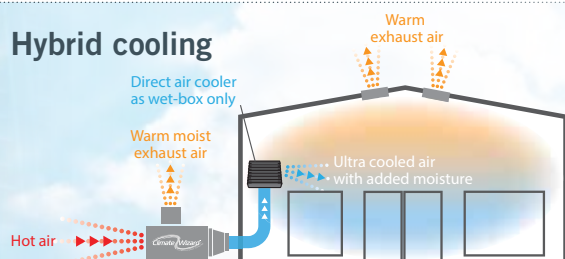
Climate Wizard installed in front of an air conditioning system to provide pre-cooling.

Supplementary cooling



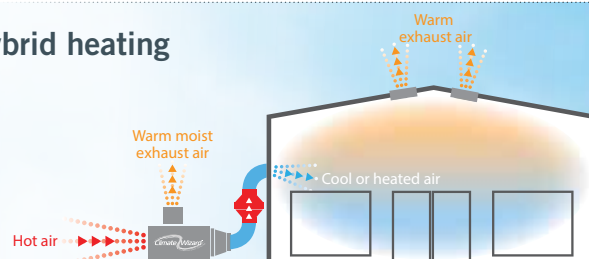
Climate Wizard used with an air cooling system to provide supplementary cooling.

Hybrid cooling

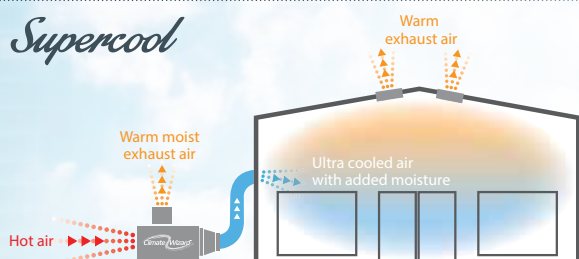


Climate Wizard is combined with other complimentary devices, such as direct evaporative 'wet-boxes' or heating devices; such as elements, hot water coils, gas-fired exchangers to successfully resolve a variety of heat load and comfort challenges.

Hybrid heating

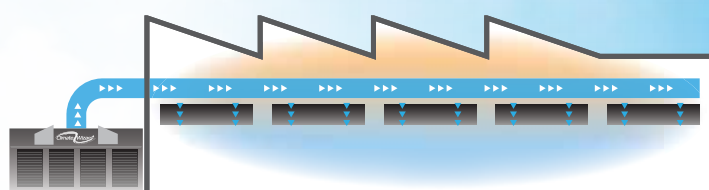


Supercool



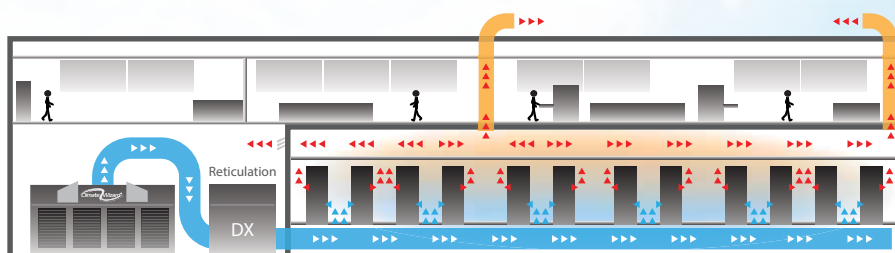
Climate Wizard Supercool delivers ultra cooled air with added moisture, that can be fine-tuned to specifications.

High capacity with high volume module



High capacity Climate Wizard with HVM (high volume module) used to provide stand alone cooling or be interconnected into a common air handling system.

Customised to mechanical specifications



Climate Wizard HVM can be designed to integrate with other air conditioning equipment supplied by other contractors.

How it works

Climate Wizard indirect evaporative air conditioner uses a hyper-efficient counter-flow heat exchanger to produce 100% fresh, cool, outside air, with no added moisture.

The fresh cold air produced by Climate Wizard can be equivalent to that produced by refrigerated systems, with temperatures that approach the ambient dew-point temperature.

1. Hot air enters the cooler

- Hot outside air enters the cooler via the inlet.
- A powerful, energy-efficient, electric fan moves the air towards the core.

2. Hot air passes through the core

- The core is an air-to-air heat exchanger consisting of alternating dry and wet channels.
- All of the air passes along the dry channels and gains no additional moisture.

3. Warm, moist air exhausted outside

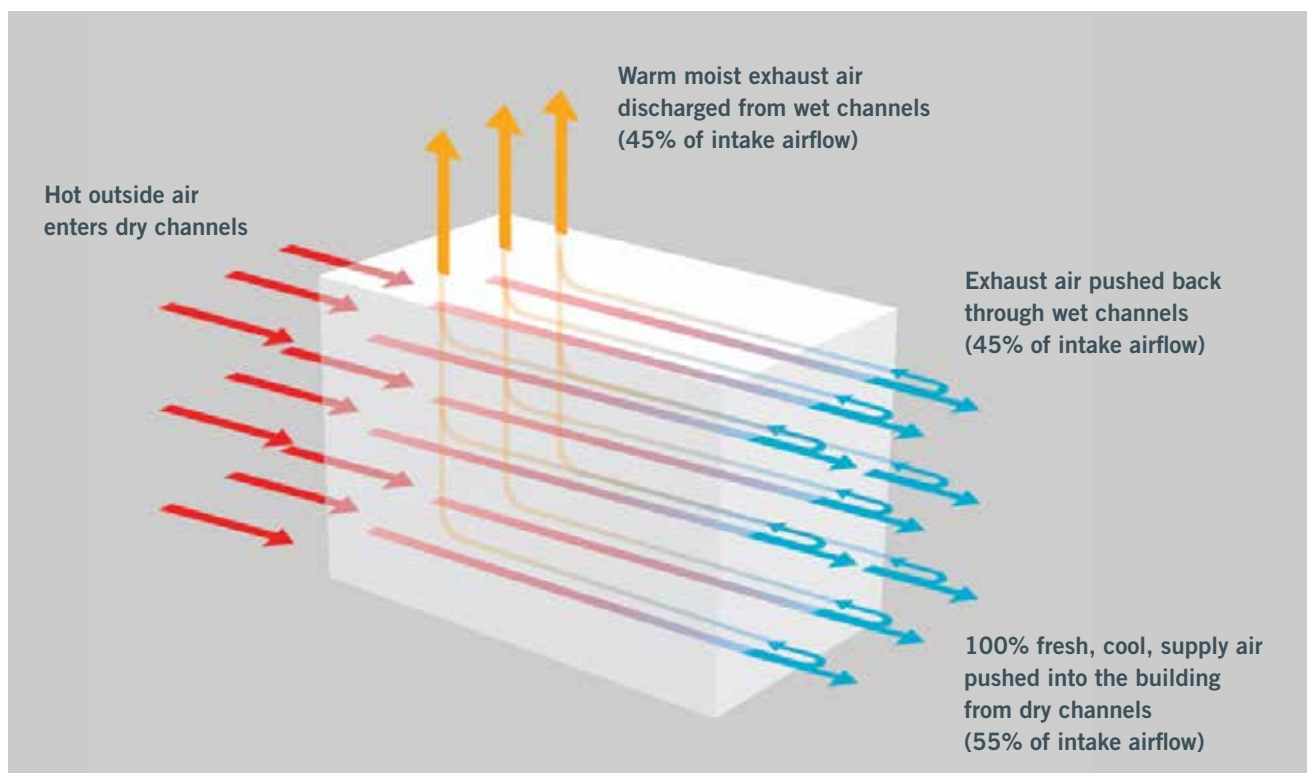
- As the air exits the dry channels, a portion of the conditioned air is returned through the wet channels. Through evaporation and conduction, it gains both moisture and heat. The channels are continuously soaked with water. This moist, warm air is then exhausted outside of the building.

- No moisture is transferred across the membranes between the dry and wet channels; only temperature (heat) is transferred.
- The heat passes out of the air in the dry channels through the membrane and into the air passing through the wet channels.
- In this way, the air in the dry channels becomes progressively colder but gains no moisture.

4. Fresh, cool outside air passes into the building

- The air passing along the dry channels in the core is cooled, with no moisture added.
- This fresh, cool air passes into the building.

Climate Wizard counter-flow heat exchanger



Psychrometric chart

Barometric pressure 101.3 kPa

The coloured lines on the psychrometric chart compare Climate Wizard's performance to that of a direct evaporative cooler on a hot day.

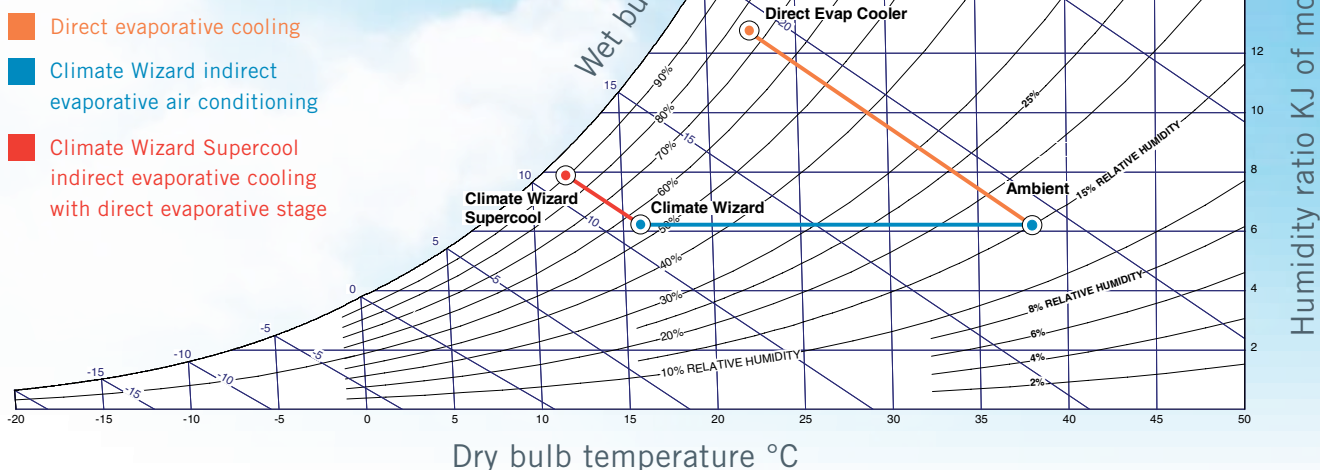


Chart explanation: Consider fresh air entering the cooler at 38° C dry-bulb and about 15% relative humidity. If the cooler is a direct evaporative air cooler, the fresh air passes directly through the wet cooling pad where it becomes cool and also moist, and emerges at about 22° C dry-bulb and 75% relative humidity. The process has travelled along the wet-bulb (orange) line and the air has gained about 6.5 grams/kg of additional moisture.

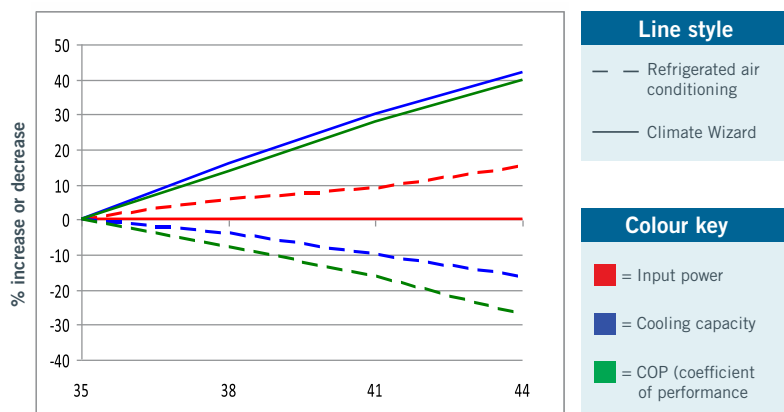
In the case of an indirect evaporative air cooler, the fresh air passes through the dry channel where it is cooled and

emerges at 16° C. But, no moisture has been added as the cooling process has occurred along the constant moisture (blue) line. The 'wet-bulb effectiveness' of Climate Wizard can reach 125%, whereas regular direct air coolers have a wet-bulb effectiveness of about 85%.

The Climate Wizard Supercool has a further direct evaporative cooling process directly after the indirect evaporative process. This allows the Supercool to provide an additional reduction in the supply temperature while adding minimal water content.

Performance comparison

Climate Wizard vs refrigerated cooling as temperature rises



Outdoor Temperature (Degrees Celsius DB)
Source: Uni SA Roxby Downs Report June 2009

Climate Wizard's cooling performance can rival that of refrigerated systems, using up to 80% less energy. That's not only great for reducing power bills; it's also great for the environment. And, no matter how hot it gets outside, Climate Wizard uses the same amount of power and still delivers 100% fresh, cool air inside. This is in direct contrast to refrigerated systems, which require increasing amounts of power as outside temperatures rise. Climate Wizard's cost-saving capabilities actually **increase**, when the heat is at its highest. At the same time, Climate Wizard's performance also **increases** as temperatures rise – again, in complete contrast to refrigerated systems.

Technical specifications

| | Climate Wizard | | |
|--------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| | CW-H10 | CW-H15 | CW-80 |
| Nominal cooling capacity* | 20 kW | 27 kW | 146 kW, pre-cooling outside air |
| Rated airflow | 800 L/s (2,880 m³/h) at 0 - 215 Pa | 1,100 L/s (3,960 m³/h) at 0 - 190 Pa | 6,400 L/s (23,000 m³/h) supply, 5,240 L/s (18,860 m³/h) exhaust at 100 Pa external static pressure |
| Max. external static pressure | 215 Pa | 190 Pa | 250 Pa |
| Max. inlet air temperature | 55 °C | 55 °C | 55 °C |
| Power requirement | 1.4 kW | 1.8 kW | Input power - 10.0 kW at rated airflow |
| Electrical supply | 3-phase, 380-480 V, 50/60 Hz | 3-phase, 380-480 V, 50/60 Hz | 3-phase, 380-480 V, 50/60 Hz |
| Water supply | 20 L/min delivered at 100 kPa min, 800 kPa max | 20 L/min delivered at 100 kPa min, 800 kPa max | 80 L/min delivered at 100 kPa min, 800 kPa max (External in-line filtration recommended) |
| Supply air configuration | Side discharge | Side discharge | Side discharge |
| Supply fans | Backward curved centrifugal fan with direct coupled EC motor | Backward curved centrifugal fan with direct coupled EC motor | 2 x Backward curved centrifugal fan with direct coupled EC motor |
| Exhaust fans | Backward curved centrifugal fan with direct coupled EC motor | Backward curved centrifugal fan with direct coupled EC motor | 4 x Backward curved centrifugal fan with direct coupled EC motor |
| Pump | Water circulation pump | Water circulation pump | Water circulation pump |
| Low voltage catalytic chlorinator | 2 chlorinators; salinity probe | 2 chlorinators; salinity probe | 2 chlorinators; salinity probe |
| Drain valve | Low voltage, vertical, electric drive | Low voltage, vertical, electric drive | Low voltage, vertical, electric drive |
| Counter-flow Heat exchange core | 2 x Climate Wizard patented counter-flow heat exchange cores | 3 x Climate Wizard patented counter-flow heat exchange cores | 16 x Climate Wizard patented counter-flow heat exchange cores |
| Air filtration | G4 pleated washable filters with metal frames | G4 pleated washable filters with metal frames | 16 x G4 pleated washable filters with metal frames size 625 mm x 625 mm x 45 mm |
| Water reservoir | One piece, moulded polymer, 45 L | One piece, moulded polymer, 65 L | One piece, moulded polymer, 300 L |
| Dimensions | 1985 mm (L) x 1230 mm (W) x 1170 mm (H) | 1985 mm (L) x 1825 mm (W) x 1170 mm (H) | 3,800 mm (L) x 2,570 mm (W) x 3,600 mm (H) |
| Shipping weight | 180 kg | 220 kg | 2,160 kg |
| Operating weight | 225 kg | 265 kg | 2,620 kg |

Note: specifications subject to change.

*Based on design conditions of 36.1 °C db / 17.8 °C wb. Stand alone cooling capacity may be lower, depending on application.

Climate Wizard Supercool

| CW-160 | CW-H15S | CW-H15S winery configuration | CW-80S |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| 264 kW, pre-cooling outside air | 47 kW | 32 kW | 182 kW, pre-cooling outside air |
| 11,800 L/s (42,480 m³/h) supply, 9,650 L/s (34,740 m³/h) exhaust at 100 Pa external static pressure | 1,700 L/s (6,120 m³/h) at 0 - 120 Pa | 1,100 L/s (3,960 m³/h) at 0 - 140 Pa | 6,400 L/s (23,040 m³/h) supply, 5,240 L/s (18,864 m³/h) exhaust at 40 Pa external static pressure |
| 250 Pa | 80 Pa | 140 Pa | 200 Pa |
| 55 °C | 55 °C | 55 °C | 55 °C |
| Input power - 20.0 kW at rated airflow | 1.8 kW | 1.8 kW | Input power - 10.0 kW at rated airflow |
| 3-phase, 380-480 V, 50/60 Hz | 3-phase, 380-480 V, 50/60 Hz | 3-phase, 380-480 V, 50/60 Hz | 3-phase, 380-480 V, 50/60 Hz |
| 120 L/min delivered at 100 kPa min, 800 kPa max (External in-line filtration recommended) | 20 L/min delivered at 100 kPa min, 800 kPa max | 20 L/min delivered at 100 kPa min, 800 kPa max | 80 L/min delivered at 100 kPa min, 800 kPa max (External in-line filtration recommended) |
| Top discharge | Side discharge | Side discharge | Side discharge |
| 4 x Backward curved centrifugal fan with direct coupled EC motor | Backward curved centrifugal fan with direct coupled EC motor | Backward curved centrifugal fan with direct coupled EC motor | 2 x Backward curved centrifugal fan with direct coupled EC motor |
| 8 x Backward curved centrifugal fan with direct coupled EC motor | Backward curved centrifugal fan with direct coupled EC motor | Backward curved centrifugal fan with direct coupled EC motor | 4 x Backward curved centrifugal fan with direct coupled EC motor |
| Water circulation pump | Water circulation pump | Water circulation pump | Water circulation pump |
| 2 chlorinators; salinity probe | 2 chlorinators; salinity probe | 2 chlorinators; salinity probe | 2 chlorinators; salinity probe |
| Low voltage, vertical, electric drive | Low voltage, vertical, electric drive | Low voltage, vertical, electric drive | Low voltage, vertical, electric drive |
| 32 x Climate Wizard patented counter-flow heat exchange cores | 3 x Climate Wizard patented counter-flow heat exchange cores | 3 x Climate Wizard patented counter-flow heat exchange cores | 16 x Climate Wizard patented counter-flow heat exchange cores |
| 32 x G4 pleated washable filters with metal frames size 625 mm x 625 mm x 45 mm | G4 pleated washable filters with metal frames | G4 pleated washable filters with metal frames | 16 x G4 pleated washable filters with metal frames size 625 mm x 625 mm x 45 mm |
| One piece, moulded polymer, 300 L | One piece, moulded polymer, 65 L | One piece, moulded polymer, 65 L | One piece, moulded polymer, 300 L |
| 6,600 mm (L) x 2,570 mm (W) x 3,600 mm (H) | 1985 mm (L) x 1825 mm (W) x 1170 mm (H) | 1985 mm (L) x 1825 mm (W) x 1170 mm (H) | 3,800 mm (L) x 2,570 mm (W) x 3,600 mm (H) |
| 4,320 kg | 230 kg | 230 kg | 2,185 kg |
| 5,149 kg | 280 kg | 280 kg | 2,665 kg |

SEELEY INTERNATIONAL

Breezair
NUMBER ONE IN NATURAL COOLING

Braemar
HEATING COOLING

Climate Wizard
HYPER-EFFICIENT COOLING

convair

coolair

Braemar
Tudor Romeo

Coolerado

Seeley International is Australia's largest air conditioning and ducted gas heating manufacturer and a global leader in developing ingenious, energy-efficient cooling and heating products.

Our vision is to lead the world in creating climate control solutions which continue to be highly innovative, of premium quality and inspirational in their delivery of energy-efficiency.

But it's more than just a vision... it's a way of life!

A commitment to innovation and excellence is at the heart of all that we do. Our success in delivering on that commitment has been recognised by our many awards and our expanding global presence. Seeley International now exports to over 120 countries. Not bad for a company that started out in 1972 in the garage of its founder and Executive Chairman, Frank Seeley AM FAICD, who was named South Australian of the Year for 2011!

Seeley International offers a range of heating and cooling solutions, many of which can be combined.

| | Ducted evaporative cooling | Indirect evaporative cooling | Ducted gas heating | Reverse cycle air conditioning & add-on cooling | Portable heating / cooling | Wall furnaces & space heaters | Gas cooktops |
|---------------------|----------------------------|------------------------------|--------------------|-------------------------------------------------|----------------------------|-------------------------------|--------------|
| Breezair | ✓ | | | | | | |
| Braemar | ✓ | | ✓ | ✓ | | ✓ | |
| Climate Wizard | | ✓ | | | | | |
| Convair | | | | | ✓ | | |
| Coolair | ✓ | | | | | | |
| Braemar Tudor Romeo | | | | | | | ✓ |
| Coolerado | | ✓ | | | | | |

Climate Wizard
HYPER-EFFICIENT COOLING

climatewizard.com



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Information in this brochure was correct at the time of preparation. E & OE