

*The Climate Wizard*  
By SEELEY INTERNATIONAL ™

## Indirect Evaporative Air Conditioning





# World leading climate control solutions

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

## The award winning company

Seeley International consistently wins awards each year for new product design, innovation and environmental friendliness. Recent awards include:



Hyper-efficient indirect evaporative air conditioners



Refrigerated air conditioning range including VRF (heat pump and heat recovery)  
Industrial & commercial evaporative air conditioners

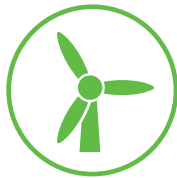


# About Climate Wizard

Climate Wizard's unique indirect evaporative heat exchange core provides hyper-efficient cooling of outside air.

Generate **100% fresh, cool, outside air**, at temperatures that rival refrigerated systems, with up to **80% lower energy costs\***.

## Reduce carbon emissions Low GWP



- Reduced running costs by up to 80%\*
- Reduce the energy use and improve the cooling performance of existing refrigerated systems
- No high electrical demand charges even in hot weather
- Savings on the installation costs

## Comfortable indoor air quality



- Temperatures are similar to those produced by refrigerated systems
- Improved IAQ (indoor air quality) with 100% outside air
- No moisture added to the air\*\*
- Total cooling performance increases when air temperature rises

## Flexible applications



- Flexible design and engineering configurations
- Ideal for use as a DOAS (dedicated outdoor air system), data centres cooling or for comfort cooling applications
- Covers an exceptionally large range of flexible configurations in a wide range of industries
- Supported by a team of experienced design consultants and engineers

## Supporting Sustainability



- Wiser use of water (R-718)
- Responsible use of renewable resources
- No synthetic refrigerants or chemicals
- Features an Auto-Cleanse™ to minimise water consumption and to maintain quality

## Hyper-efficient



- Simple, reliable solution to improve COP / EER (coefficient of performance / energy efficiency ratio)
- Meets various regulatory requirements
- Tested in NATA (National Association of Testing Authorities) accredited laboratory#

## Low maintenance with technical support



- Australian designed, made and owned
- Easy access to spare parts
- National service network
- After sales support

\*Compared to refrigerated systems performing the same duty

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

#Testing of the CW-80 units in the NATA accredited Meridian Test Laboratory is not possible due to their large and unique size.

# Standard product range

## Climate Wizard

Indirect evaporative air conditioning

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



**CW-H10**

UP TO  
**18kW**

- COP of up to 12
- Up to 18 kW of cooling capacity in outside air pre-cooling applications
- Up to 800 L/s (2,880 m<sup>3</sup>/h) supply air



**CW-H15**

UP TO  
**25kW**

- COP of up to 14
- Up to 25 kW of cooling capacity in outside air pre-cooling applications
- Up to 1,100 L/s (3,960 m<sup>3</sup>/h) supply air



**CW-80**

UP TO  
**140kW**

- COP of up to 14
- Up to 140 kW of cooling capacity in outside air pre-cooling applications
- Up to 6,400 L/s (23,040 m<sup>3</sup>/h) supply air

**CW-80 Twin**

UP TO  
**280kW**

- COP of up to 14
- Up to 280 kW of cooling capacity in outside air pre-cooling applications
- Up to 12,800 L/s (46,080 m<sup>3</sup>/h) supply air

## Climate Wizard Supercool

Indirect evaporative cooling with direct evaporative stage

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



**CW-H15S Plus**

UP TO  
**40kW**

- COP of up to 18
- Up to 40 kW of cooling capacity in outside air pre-cooling applications
- Up to 1,600 L/s (5,760 m<sup>3</sup>/h) supply air

**CW-H15S**



UP TO  
**28kW**

- COP of up to 16
- Up to 28 kW of cooling capacity in outside air pre-cooling applications
- Up to 1,100 L/s (3,960 m<sup>3</sup>/h) supply air

Discover how **CW-H15S** is the ideal solution for winery barrel halls at [seeleyinternational.com/winemaker](http://seeleyinternational.com/winemaker)



**CW-3**

UP TO  
**13kW**

- COP of up to 20
- Up to 13 kW of cooling capacity in stand alone cooling applications
- Up to 1,300 L/s (4,680 m<sup>3</sup>/h) supply air



**CW-80S**

UP TO  
**160kW**

- COP of up to 13
- Up to 160 kW of cooling capacity in outside air pre-cooling applications
- Up to 6,400 L/s (23,040 m<sup>3</sup>/h) supply air

# How it works

Climate Wizard indirect evaporative air conditioners use 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 similar 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

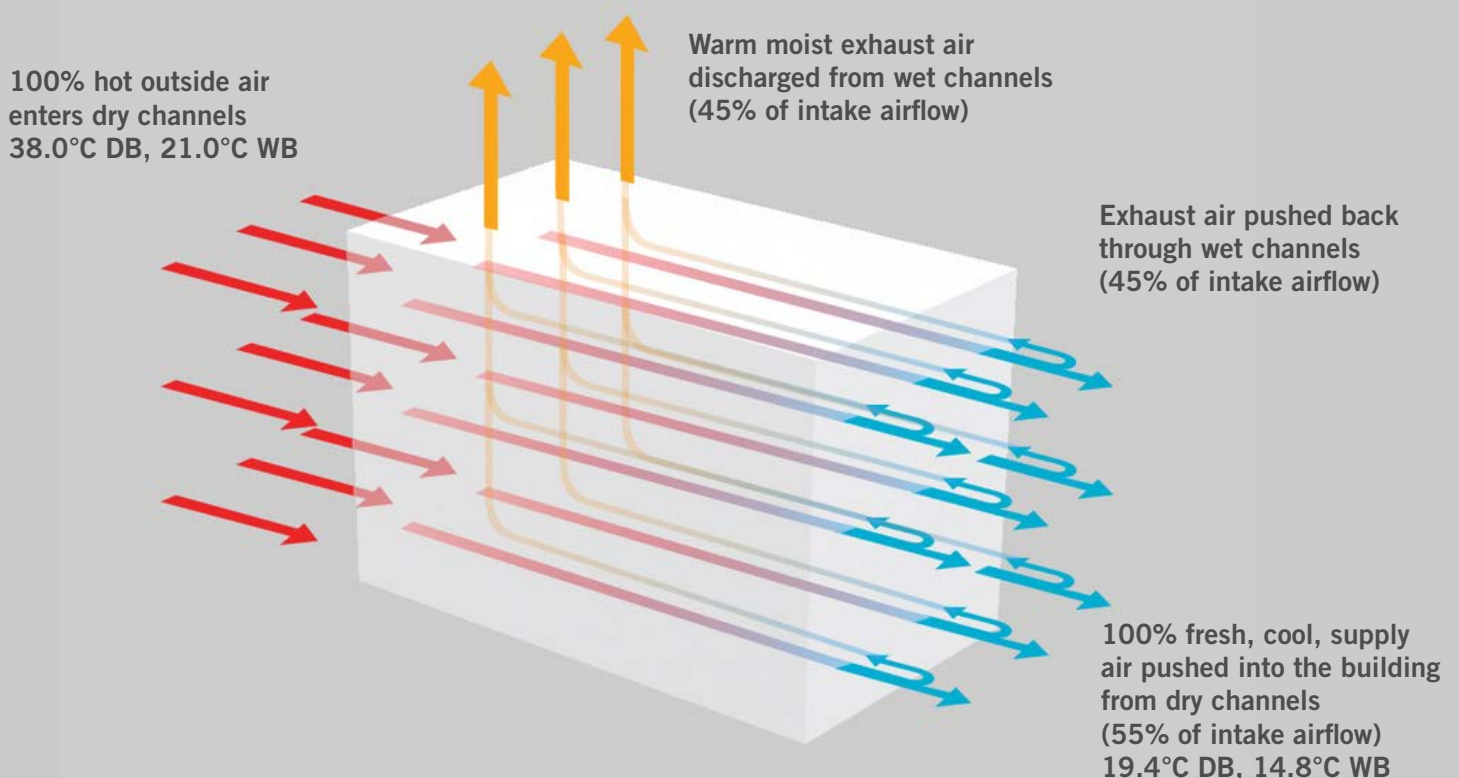
- As the air exits the dry channels, a portion of the conditioned air is returned through the wet channels.
- Through evaporation and conduction, it gains both moisture and heat. The channels are continuously soaked with water. This moist, warm air is then exhausted outside of the building.

- 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

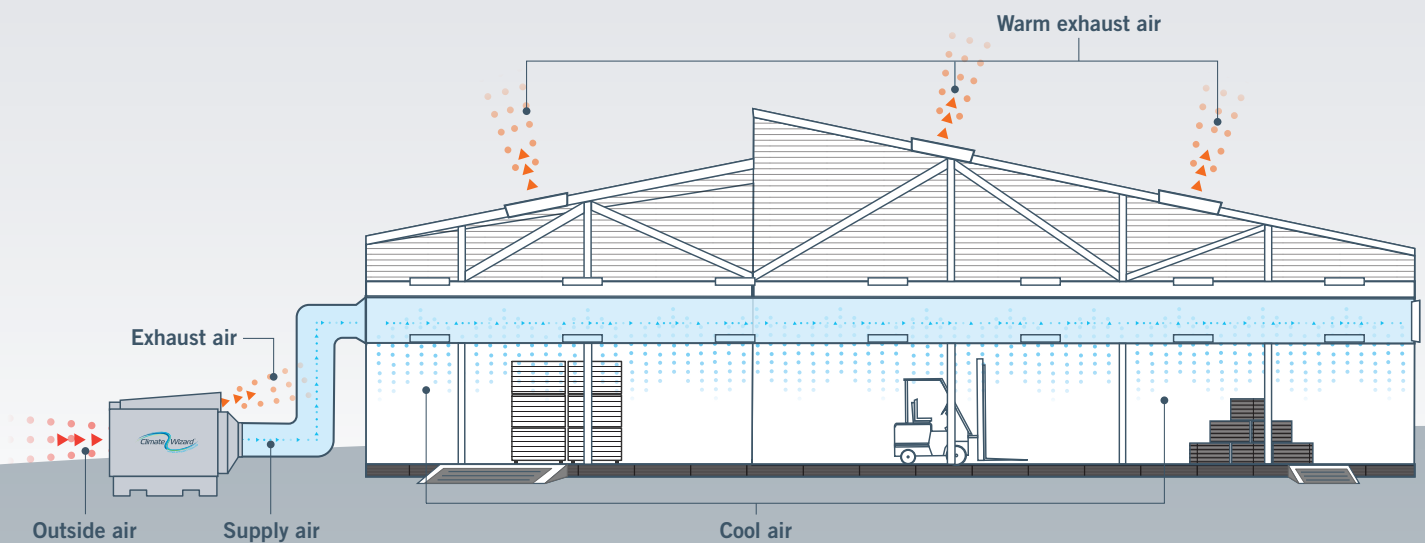


# Diverse configurations and applications

Dramatically reduce energy consumption and cooling costs by incorporating Climate Wizard with other HVAC systems.

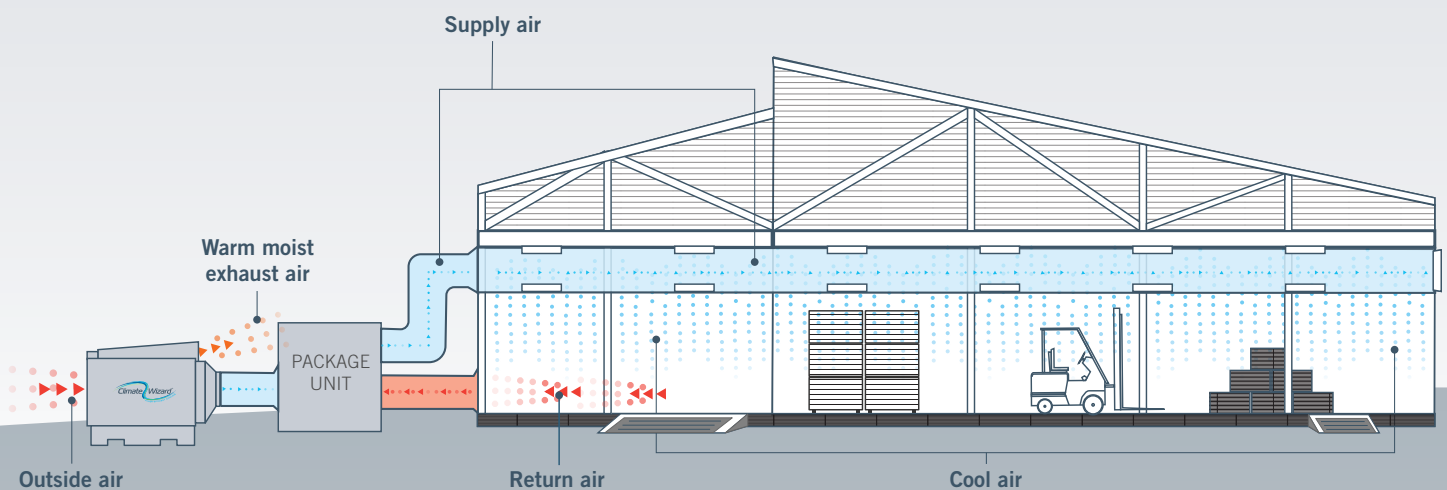
## Stand-alone cooling

Ideal for open plan and outdoor access applications



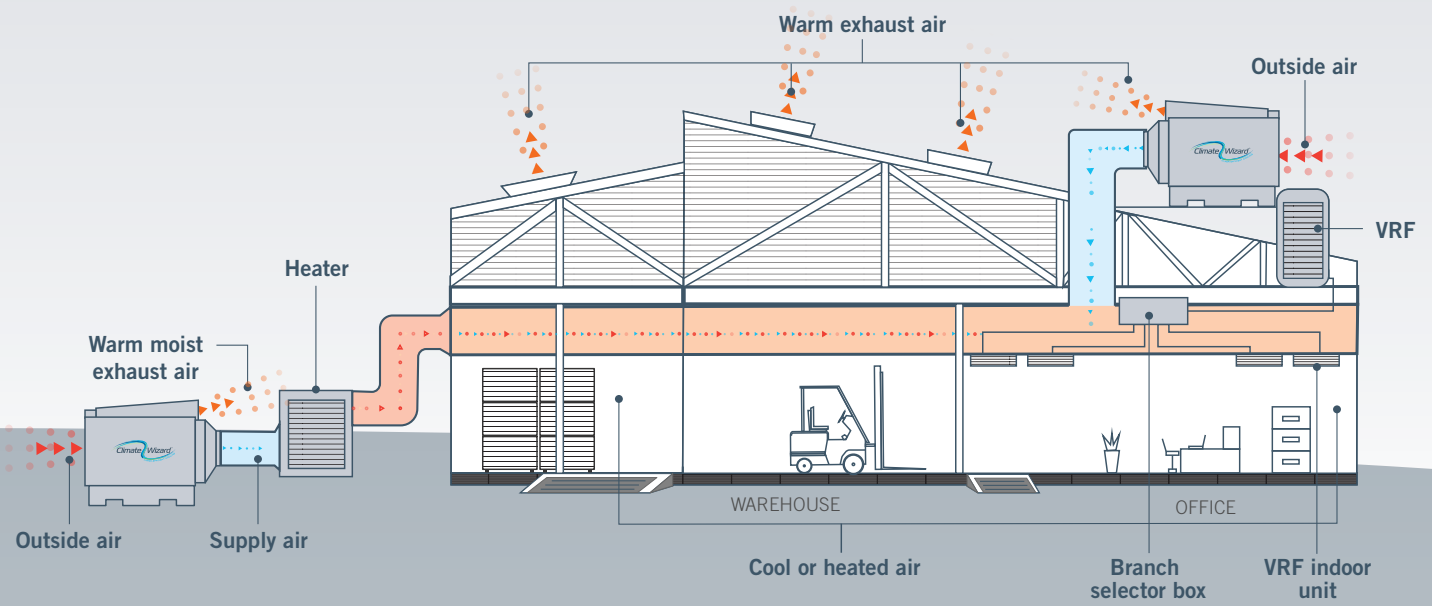
## Pre-cooling

A super cost effective way of cooling outside air required by refrigerated systems



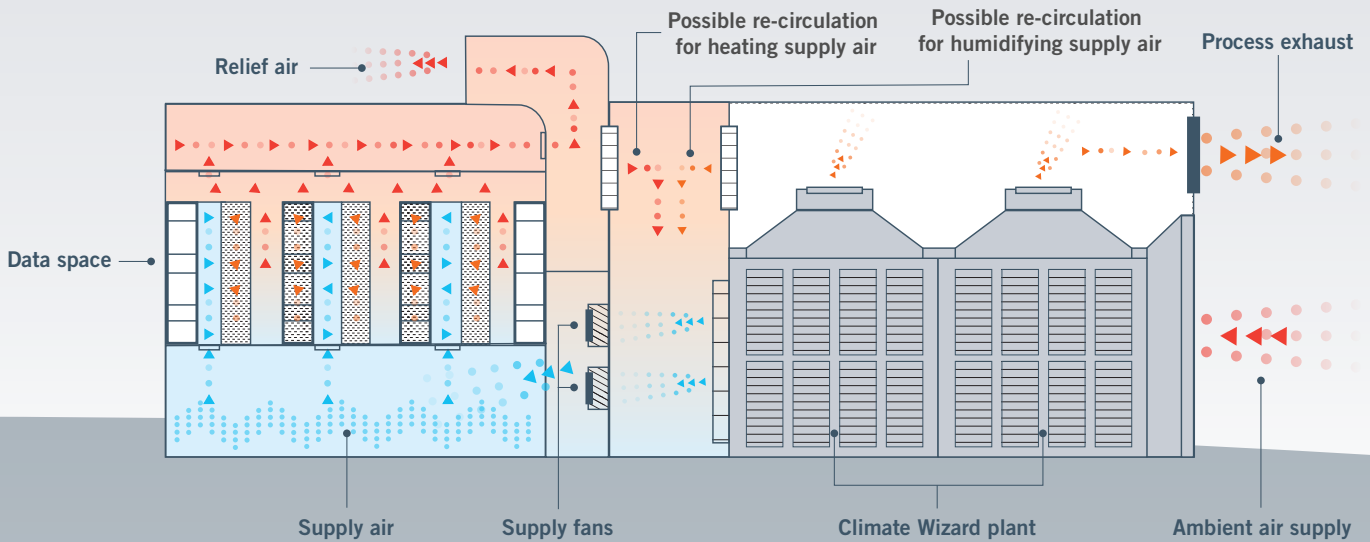
## Hybrid heating and cooling

Ensure full design heating and cooling capacity by combining Climate Wizard with other HVAC equipment such as commercial heating and/or VRF



## Data centre cooling

Climate Wizard delivers the right indoor climate and achieves outstanding PUE



# Design and performance features CW-H15 Series

## 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 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® circulation 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

## Drip tray

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

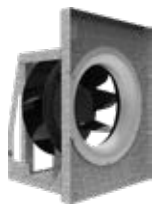
## Water management system

- 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
- Alarms if low water levels are detected
- Manages water distribution for minimum water consumption and maximum cooling efficiency
- Automatic drain valve - controlled to manage water quality and maximise system efficiency
- Drains the water system during prolonged idle periods



## Supply air fan and electric motor

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

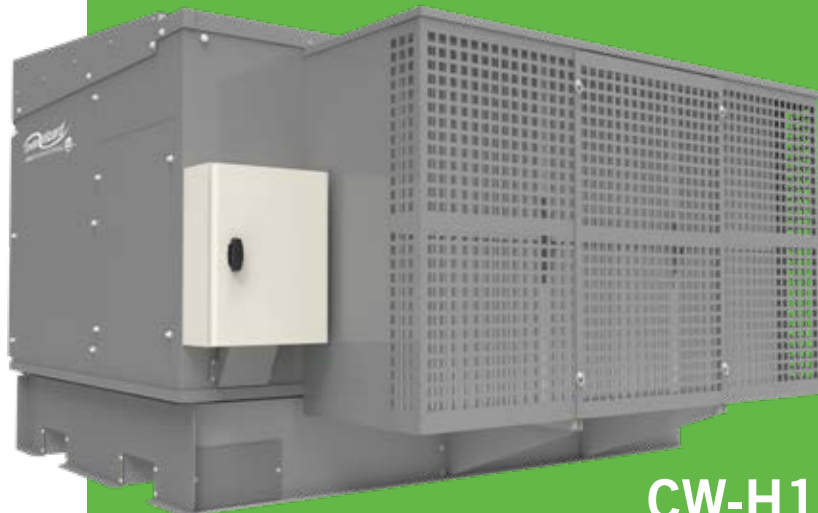


## Water distributor

- 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

Latest advanced technology

CW-H15 has been upgraded with the latest state-of-the-art technology, including:

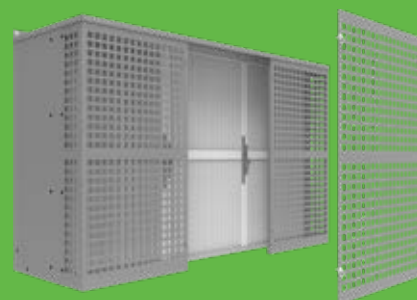
### Increased outside air intake

The filter cowling has been upgraded to improve rigidity and strength while also allowing for quick and simple servicing.

Air intake efficiency has improved by increasing the air openings of the cowling. The filter cowling comes factory assembled to reduce installation requirements on site.

### Upgraded filter design

The filters have been designed to increase surface area for reduced pressure drop and are arranged in a flat panel layout which improves access and servicing.



### Schneider PLC and Schneider controller

The CW-H15 introduces the cutting-edge Schneider PLC with temperature and humidity sensor. Remotely access via webserver or control locally on the 4" colour touch screen display. Compatible with indirect/direct "supercool" range.

### Black Opal™ Mini-Cell^ Chillcel® pads

Our revolutionary Black Opal™ Mini-Cell^ Chillcel® pads have transformed the aesthetics of our coolers as they seamlessly blend into their surroundings; maintaining our global leading Mini-cell^ Chillcel® pad technology, which increases surface area of the pads by 25%, dramatically multiplying cooling capacity and efficiency – **BEYOND BELIEF!**

^Patent pending



### Cabinetry

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

### PLC and electronic control module

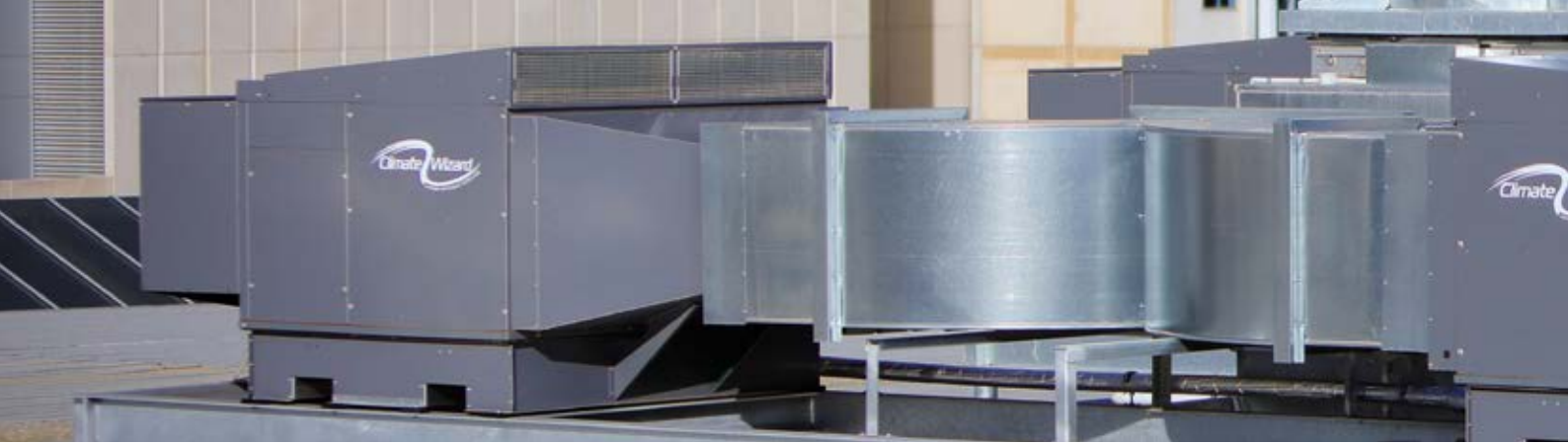
- Advanced electronics programmed for maximum efficiency
- Controls unit operation to minimise water consumption and maximise efficiency
- Can be configured to accept external BMS system inputs to control system operation (while retaining control of water management and system efficiency)
- Smart, reliable,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



## Climate Wizard Supercool

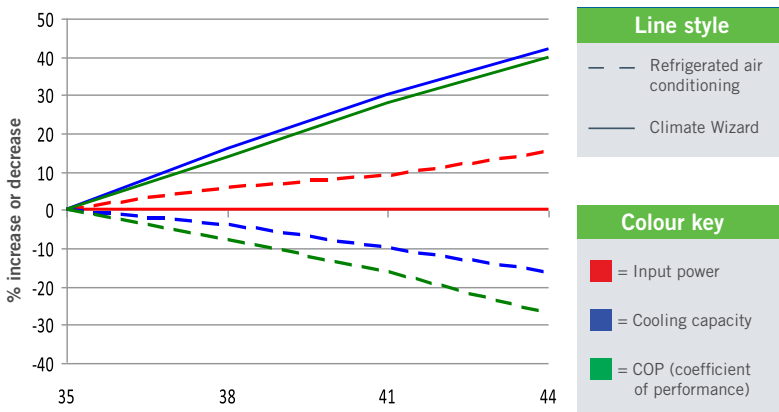
CW-H15S, CW-H15S Plus and CW-80S models available

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



# 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.

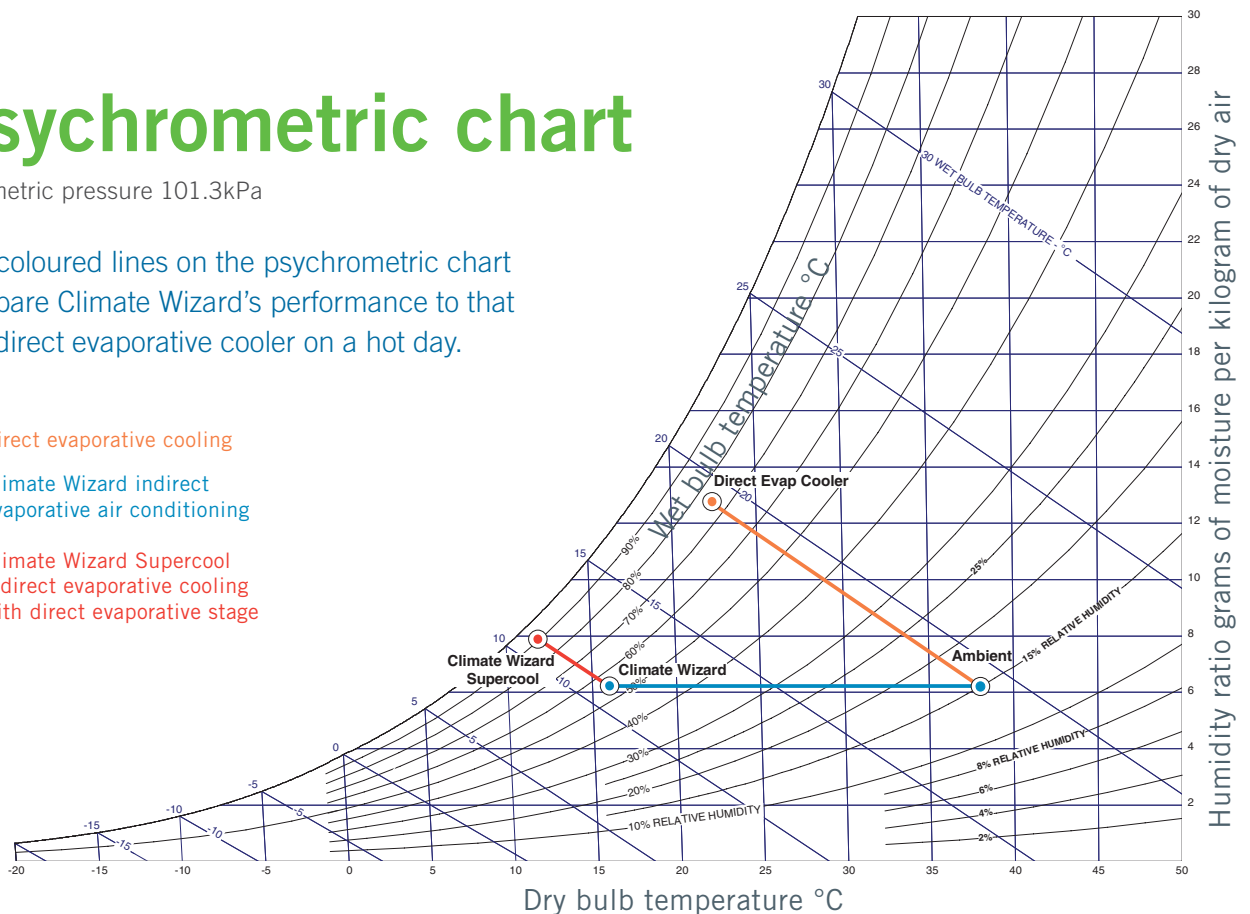
At the same time, Climate Wizard's performance also increases as temperatures rise – again, in complete contrast to refrigerated systems.

# Psychrometric chart

Barometric pressure 101.3kPa

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

- Direct evaporative cooling
- Climate Wizard indirect evaporative air conditioning
- Climate Wizard Supercool indirect evaporative cooling with direct evaporative stage





# Climate Wizard Cooling Performance

## Supply Air Temperature

Location	Design condition	Climate Wizard Leaving Air Temp (°C)						
		CW-3	CW-H10	CW-H15	CW-H15S	CW-H15S Plus	CW-80	CW-80S
Arid	42°C DB / 21°C WB	19	18	18	14	16	19	15
Temperate	37°C DB / 19°C WB	18	17	17	14	15	18	15
Continental	31°C DB / 20°C WB	20	19	19	17	18	20	18
Sub-Tropical	31°C DB / 23°C WB	23	22	22	20	21	22	21
Tropical	33°C DB / 26°C WB	26	26	26	25	25	26	25

## Stand-Alone Cooling Capacity

Location	Design condition	CW-3		CW-H10		CW-H15		CW-H15S		CW-H15S Plus		CW-80		CW-80S	
		kW	COP	kW	COP	kW	COP	kW	COP	kW	COP	kW	COP	kW	COP
Arid	42°C DB / 21°C WB	12	7	9	6	12	7	18	10	23	10	68	7	96	10
Temperate	37°C DB / 19°C WB	15	8	10	7	14	8	19	10	25	11	75	8	101	10
Continental	31°C DB / 20°C WB	13	7	8	6	11	6	14	8	19	9	62	6	78	8
Sub-Tropical	31°C DB / 23°C WB	8	4	6	4	8	4	9	5	13	6	40	4	52	5

## Pre-Cooling Capacity

Location	Design condition	CW-H10		CW-H15		CW-H15S		CW-H15S Plus		CW-80		CW-80S	
		kW	COP	kW	COP	kW	COP	kW	COP	kW	COP	kW	COP
Arid	42°C DB / 21°C WB	24	17	33	18	39	21	53	24	186	16	216	19
Temperate	37°C DB / 19°C WB	20	14	27	15	32	18	44	20	153	14	180	17
Continental	31°C DB / 20°C WB	12	8	16	9	19	11	26	12	90	7	107	9
Sub-Tropical	31°C DB / 23°C WB	9	7	13	7	14	8	20	9	68	5	80	6
Tropical	33°C DB / 26°C WB	7	5	10	6	11	6	15	7	53	3	61	4

## Climate Wizard cooling performance calculator

Enter the key parameters to compare how much energy can be saved. Typically the results are compelling.

You will be provided with a summary and a report of your results to meet local climate conditions.

Go to [seeleyinternational.com/commercial/tools](http://seeleyinternational.com/commercial/tools)



# Controller options

## BMS interface

Standard on all models

All Climate Wizard air conditioning models are supplied with an interface to enable the cooler to be controlled from an external location, using a Building Management System.

## BACnet

Optional on CW-80, CW-80S, and CW-80 Twin

Building Automation and Control Network communication protocol is available on all CW-80 models.

## Multi-Magic™ PLC touch screen controller

Optional with CW-H15 range

- 4" colour touch screen display with temperature and humidity sensor.
- Compatible with Indirect / Direct "Supercool" range
- 7 day programmable timer, 4 events per day
- Service screen with operational history for ease of troubleshooting and servicing
- Operate up to 15 coolers from one control



## Schneider PLC

Standard with CW-H15 range

- PLC screen and interface for local control and functionality
- Low level BMS interface – volt free contacts
- High level BMS interface - Modbus compatible
- 24Vdc power supply available



## MagiQtouch® controller (Modbus capable)

Optional with CW-3

- Easy operating process due to in-built Installation Wizard
- Each cooler comes supplied with 20m wiring loom (extendable to maximum 40m)
- Operate up to 60 coolers (total loom length must be 500m from a single MagiQtouch controller, using optional Link Module and wiring loom-no special controllers required)
- Operate Braemar ducted gas heating and Climate Wizard cooling from the same MagiQtouch controller



## MagiQtouch® BMS Industrial Controller MS1

Optional with CW-3

- Optional 12Vdc power supply
- 100m communication cable
- Operate up to 60 coolers using link modules



# Technical specifications

	Climate Wizard	
	CW-H10	CW-H15
Nominal cooling capacity*	18 kW	25 kW
Rated airflow	800 L/s (2,880 m <sup>3</sup> /h) at 180 Pa external static pressure	1,100 L/s (3,960 m <sup>3</sup> /h) at 150 Pa external static pressure
Max. external static pressure	215 Pa	215 Pa
Max. inlet air temperature	55 °C	55 °C
Power requirement	1.5 kW	1.8 kW
Electrical supply	3-phase, 380-415 V, 50 Hz	3-phase, 380-415 V, 50 Hz
Water supply	20 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 (External in-line filtration recommended)
Water consumption	44 L/h	56 L/h
Supply air configuration	Side discharge	Side discharge
Supply fans	Backward curved centrifugal fan with direct coupled EC motor	Backward curved centrifugal fan with direct coupled EC motor
Exhaust fans	n/a	n/a
Pump	Water circulation pump	Water circulation pump
Water management	Low voltage catalytic chlorinator and salinity probe	Low voltage catalytic chlorinator and salinity probe
Drain valve	Low voltage, vertical, electric drive	Low voltage, vertical, electric drive
Heat exchanger core	2 x Climate Wizard patented counter-flow heat exchanger cores	3 x Climate Wizard patented counter-flow heat exchanger cores
Air filtration	G4 pleated washable filters with metal frames	G4 pleated washable filters with metal frames
Water reservoir	One piece, moulded polymer, 45 L	One piece, moulded polymer, 65 L
Dimensions	2,330mm (L) x 1,230mm (W) x 1,325mm (H)	2,290mm (L) x 1,825mm (W) x 1,285mm (H)
Shipping weight	250 kg	340 kg
Operating weight	255 kg	330 kg
Controller options	Wall controller, BMS interface	Wall controller, BMS interface, PLC interface

Note: specifications subject to change. \*Tested in accordance with ASHRAE 143 conditions of 38.0 °C db / 21.0 °C wb. Stand alone cooling capacity may be lower, depending on application.

# Technical specifications

	Climate Wizard	
	CW-80	CW-80 Twin
Nominal cooling capacity*	140 kW**	280 kW**
Rated airflow	6,400 L/s (23,040 m³/h) at 100 Pa external static pressure	12,800 L/s (46,080 m³/h) at 100 Pa external static pressure
Max. external static pressure	250 Pa	250 Pa
Max. inlet air temperature	55 °C	55 °C
Power requirement	10.0 kW at rated airflow	20 kW at rated airflow
Electrical supply	3-phase, 380-415 V, 50 Hz	3-phase, 380-415 V, 50 Hz
Water supply	45 L/min delivered at 85 kPa min, 800 kPa max (External in-line filtration recommended)	90 L/min delivered at 85 kPa min, 800 kPa max (External in-line filtration recommended)
Water consumption	326 L/h	652 L/h
Supply air configuration	Side or top discharge	Top discharge
Supply fans	2 x backward curved centrifugal fan with direct coupled EC motor	4 x backward curved centrifugal fan with direct coupled EC motor
Exhaust fans	4 x backward curved centrifugal fan with direct coupled EC motor	8 x backward curved centrifugal fan with direct coupled EC motor
Pump	Water circulation pump	Water circulation pump
Water management	Low voltage catalytic chlorinator and salinity probe	Low voltage catalytic chlorinator and salinity probe
Drain valve	Low voltage, vertical, electric drive	Low voltage, vertical, electric drive
Heat exchanger core	16 x Climate Wizard patented counter-flow heat exchanger cores	32 x Climate Wizard patented counter-flow heat exchanger cores
Air filtration	16 x G4 pleated washable filters with metal frames size 625mm x 625mm x 45mm	32 x G4 pleated washable filters with metal frames size 625mm x 625mm x 45mm
Water reservoir	One piece, moulded polymer, 180 L	2 x one piece, moulded polymer, 180 L
Dimensions	4,470mm (L) x 2,550mm (W) x 3,515mm (H)	6,005mm (L) x 2,550mm (W) x 4,205mm (H)
Shipping weight	2,000 kg	3,910 kg
Operating weight	2,700 kg	5,320 kg
Controller options	BMS interface, BACnet (optional)	BMS interface, BACnet (optional)

Note: specifications subject to change. \*Tested in accordance with ASHRAE 143 conditions of 38.0 °C db / 21.0 °C wb. Stand alone cooling capacity may be lower, depending on application. \*\*Temperature data from field measurements.

# Technical specifications

	Climate Wizard Supercool			
	CW-3	CW-H15S Plus	CW-H15S	CW-80S
Nominal cooling capacity*	13 kW	40 kW	29 kW	160 kW**
Rated airflow	1,300 L/s (4,680 m <sup>3</sup> /h) at 150 Pa external static pressure	1,600 L/s (5,760 m <sup>3</sup> /h) at 80 Pa external static pressure	1,100 L/s (3,960 m <sup>3</sup> /h) at 120 Pa external static pressure	6,400 L/s (23,040 m <sup>3</sup> /h) at 100 Pa external static pressure
Max. external static pressure	250 Pa	155 Pa	195 Pa	200 Pa
Max. inlet air temperature	50 °C	55 °C	55 °C	55 °C
Power requirement	1.75 kW	2.1 kW	1.8 kW	11.8 kW at rated airflow
Electrical supply	1-phase, 220-240 V, 50/60 Hz	3-phase, 380-415 V, 50 Hz	3-phase, 380-415 V, 50 Hz	3-phase, 380-415V, 50 Hz
Water supply	20 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 (External in-line filtration recommended)	20 L/min delivered at 100 kPa min, 800 kPa max (External in-line filtration recommended)	45 L/min delivered at 85 kPa min, 800 kPa max (External in-line filtration recommended)
Water consumption	60 L/h	72 L/h	60 L/h	423 L/h
Supply air configuration	Down discharge	Side discharge	Side discharge	Side discharge
Supply fans	1x 400mm Axial forward curved fan directly coupled with inverter 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
Exhaust fans	Backward curved centrifugal fan with direct coupled Inverter motor	n/a	n/a	4 x backward curved centrifugal fan with direct coupled EC motor
Pump	Water circulation pump	Water circulation pump	Water circulation pump	Water circulation pump
Water management	Low voltage catalytic chlorinator and salinity probe	Low voltage catalytic chlorinator and salinity probe	Low voltage catalytic chlorinator and salinity probe	Low voltage catalytic chlorinator and salinity probe
Drain valve	Low voltage, vertical, electric drive	Low voltage, vertical, electric drive	Low voltage, vertical, electric drive	Low voltage, vertical, electric drive
Heat exchanger core	8 x Climate Wizard patented counter-flow Microcore heat exchanger cores	3 x Climate Wizard patented counter-flow heat exchanger cores	3 x Climate Wizard patented counter-flow heat exchanger cores	16 x Climate Wizard patented counter-flow heat exchanger cores
Air filtration	8x Type G4 Std Cartridge Aluminium Washable 635 x 356 x 25mm	6x G4 pleated washable filters with metal frames 457 x 508 x 50mm	6x G4 pleated washable filters with metal frames 457 x 508 x 50mm	16x G4 pleated washable filters with metal frames 625 x 625 x 45mm
Water reservoir	One piece, moulded polymer, 30L	One piece, moulded polymer, 65 L	One piece, moulded polymer, 65 L	One piece, moulded polymer, 180 L
Dimensions	1160mm (L) x 1160mm (W) x 1020mm (H)	2,290mm (L) x 1,825mm (W) x 1,285mm (H)	2,290mm (L) x 1,825mm (W) x 1,285mm (H)	4,470mm (L) x 2,550mm (W) x 3,515mm (H)
Shipping weight	175kg	355 kg	355 kg	2,100 kg
Operating weight	210kg	345 kg	345 kg	2,850 kg
Controller options	BMS interface, MagIQtouch controller	Wall controller, PLC interface, BMS interface^	Wall controller, PLC interface, BMS interface^	BMS interface, BACnet (optional)

Note: specifications subject to change. \*Tested in accordance with ASHRAE 143 conditions of 38.0 °C db / 21.0 °C wb. Stand alone cooling capacity may be lower, depending on application. ^CW-H15 Supercool and Supercool Plus requires additional supercool section to be externally controlled by installing contractor. \*\*Temperature data from field measurements.



### **BREEZAIR**

Ducted Evaporative Air Conditioning

### **BRAEMAR**

Ducted Gas Heating

### **CLIMATE WIZARD**

Indirect Evaporative Air Conditioning

### **CONVAIR**

Ducted Evaporative Air Conditioning

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