



for LIFE

CLOSED CIRCUIT COOLERS



eco-ATWB Coolers



† Mark owned by the Cooling Technology Institute



ENVIRONMENTALLY CONSCIOUS OPERATION
Featuring Water & Energy Conserving Technology with Plume Abatement



Get to Know EVAPCO

Since its founding in 1976, EVAPCO, Incorporated has become an industry leader in the engineering and manufacturing of quality heat transfer products around the world. EVAPCO's mission is to provide first class service and quality products for the following markets:

- Industrial Refrigeration
- Commercial HVAC
- Industrial Process
- Power

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EVAPCO is more than a name.

It is a pledge to make everyday life easier, more comfortable, more reliable, and more sustainable for people everywhere. How do we fulfill that promise? It is simple.

We never stop innovating.

At EVAPCO, we do not just talk about innovation, It is ingrained in our workflow. Guided by our annually developed R&D plans, we set out to find groundbreaking solutions that transform the way the world works for the better. It is why we have more than 78 active patents worldwide.

We craft exceptionally built solutions.

As an employee-owned company, we take pride in our work. We are proud to be one of the most experienced teams of engineers and craftsmen in the industry. This translates into solutions that are always exceptionally built. EVAPCO has an unwavering commitment to provide "best in class" heat transfer solutions and services.

We guarantee performance.

Every EVAPCO solution is put through rigorous research and testing to ensure maximum efficiency and reliability. But we do not stop there. EVAPCO is an industry leader in independent, third-party performance certifications. These certifications guarantee our performance metrics—so that you can plan your projects with complete peace of mind.

We protect the environment.

Innovation and environmental sustainability go hand-in-hand at EVAPCO. EVAPCO's industrial heat transfer equipment not only conserves natural resources and helps reduce noise pollution, they also feature recycled steel content in their construction. Our stainless steel units from headquarter are constructed of panels that contain up to 67% recycled content; over 79% in galvanized units construction. From sound reduction to water conservation to chemical elimination, we are constantly developing new technologies that deliver the ultimate operating advantages for our clients—and protect the planet for every generation that comes after us.

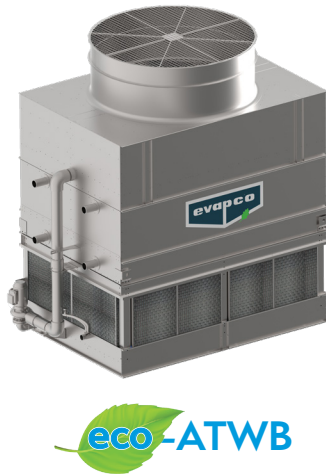


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eco-ATWB Principle of Operation

eco-ATWB Closed Circuit Coolers



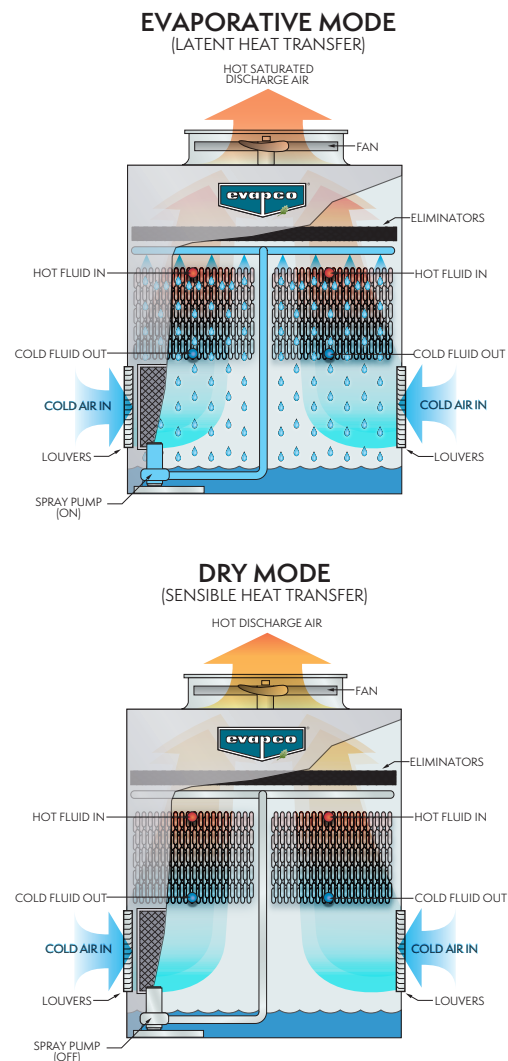
The eco-ATWB line of closed circuit coolers has been specifically designed to dramatically increase both the evaporative (latent) and dry (sensible) modes of cooling. With this revolutionary design, the EVAPCO eco-ATWB will also save water and energy by increasing the unit's efficiency in both the evaporative and dry cooling modes of operation. The eco-ATWB utilizes the EVAPCO Ellipti-fin[®] coil which features elliptical spiral fin technology to maximize the surface area available for heat transfer. The Ellipti-fin[®] coil now features **CROSSCOOL[™]** Internal Tube Enhancement which increases the internal heat transfer coefficient of the coil and thus increases the cooling capacity of the unit. The eco-ATWB is the ideal solution for: reducing water consumption, lowering energy costs, increasing the dry-bulb switchover temperature, and maintaining super low sound levels. **This product is designed with IBC Compliant construction and CTI Certified Performance.**

Evaporative Mode (Latent Heat Transfer)

The process fluid is circulated through the finned Ellipti-fin[®] coils of the closed circuit cooler. Heat from the process fluid is transferred through the tube wall and extended surface fins to the water cascading downward over the tubes. Simultaneously, air is drawing in through the air inlet louvers at the base of the cooler and travels upward over the coil opposite the spray water flow. A small portion of the water is evaporated which rejects heat. The warm moist air is drawn to the top of the closed circuit cooler by the fan and is discharged to the atmosphere. The remaining water falls to the sump at the bottom of the cooler where it is recirculated by the pump up through the water distribution system and back down over the coils.

Dry Mode (Sensible Heat Transfer)

The eco-ATWB closed circuit cooler is capable of significantly higher dry-bulb switchover temperature than a bare tube coil due to the extended surface fins of the full footprint Ellipti-fin[®] coil located entirely in the airstream. The number of coil rows and entering air combine to provide dry operation at higher dry-bulb switchover temperatures than "most" other closed circuit coolers. The ability to satisfy the heat load without operating the spray pump provides both water and energy savings.



eco-ATWB-H Closed Circuit Coolers



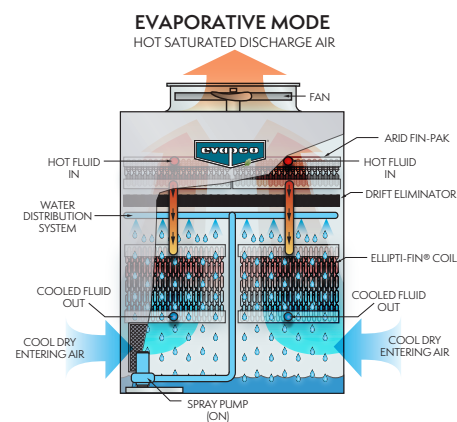
The eco-ATWB-H Hybrid line of closed circuit coolers was designed with the purpose of providing maximum water savings, higher dry-bulb switchover temperatures, while achieving plume abatement or elimination.

The eco-ATWB-H is provided with EVAPCO's **ARID fin Pak™** dry coil. Utilizing copper tubes and aluminum alloy fins, the **ARID fin Pak™** maximizes the total surface area available for sensible heat transfer, which results in maximum water savings and higher dry bulb switchover temperatures. Additionally, the eco-ATWB-H is provided with the highly efficient **Ellipti-fin®** coil in series with the **ARID fin Pak™**, achieving both latent and sensible cooling simultaneously. The **Ellipti-fin®** now features **CROSSCOOL™** Internal Tube Enhancement which increases the internal heat transfer coefficient of the coil and thus increases the cooling capacity of the unit. Located in the discharge airstream, the **ARID fin Pak™** heats the saturated discharge air, abating or eliminating plume. Because the coils are in series, a significant portion of the heat load will always be dissipated through the dry cooling coil, saving water **whenever** it is in operation!

The eco-ATWB-H is the ideal solution for: maximizing water savings, increasing dry-bulb switchover temperature(s), and providing plume reduction or plume abatement. **This product is designed with IBC Compliant construction and CTI Certified Performance.**

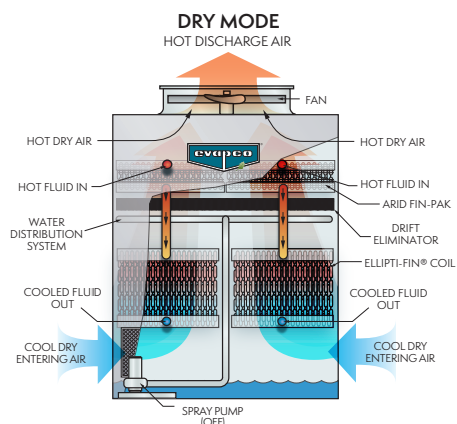
Evaporative Mode (Latent and Sensible Heat Transfer)

First, the process fluid is circulated through the **ARID fin Pak™** dry coil. A portion of the heat is rejected to the air passing over the dry coil. The process fluid then enters the finned **Ellipti-fin®** coil where the remaining heat of the process fluid is transferred through the tube wall and extended surface fins to the water cascading downward over the tubes. Simultaneously, air is drawing in through the air inlet louvers at the base of the cooler and travels upward over the coil opposite the spray water flow. A small portion of the water is evaporated which rejects heat. The warm moist air is drawn to the top of the closed circuit cooler by the fan and is discharged to the atmosphere. The remaining water falls to the sump at the bottom of the cooler where it is recirculated by the pump through the water distribution system and back down over the coils.



Dry Mode (Sensible Heat Transfer)

The eco-ATWB-H closed circuit cooler is capable of a significantly higher dry-bulb switchover temperature than a bare tube coil due to the **ARID fin Pak™** dry coil piped in series with the extended surface fins of the full footprint **Ellipti-fin®** coil located entirely in the airstream. The number of coil rows and entering air combine to provide dry operation at increased ambient temperatures. The ability to satisfy the heat load without operating the spray pump provides both water and energy savings.

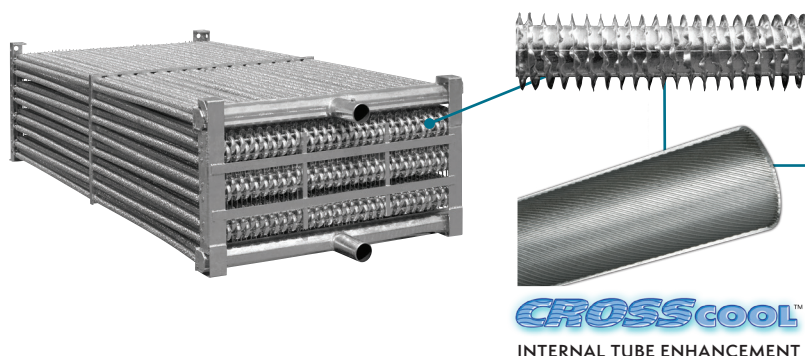


eco-ATWB Design & Construction Features

Ellipti-fin®

Galvanized Steel Elliptical Spiral Fin Coil featuring **CROSSCOOL™** Internal Tube Enhancement Technology

- Highly efficient closed circuit cooler coil in the HVAC industry!
- Up to **30% ADDITIONAL** evaporative capacity and HIGHER dry-bulb switchover temperatures
- All coil rows feature EVAPCO's finned Thermal-Pak® elliptical tube design
- Elliptical tube design results in lower airflow resistance than typical finned round tubes



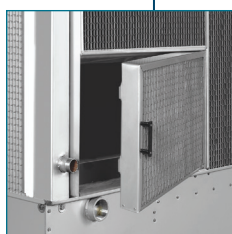
Optional Factory Mounted Chemical Water Treatment System

The eco-ATWB is available with a **Smart Shield®** (not shown) solid chemical water treatment system. The **Smart Shield®** is environmentally sensitive alternatives for treating water in evaporative cooled equipment. The **Smart Shield®** system includes all components required for an effective water treatment system; factory mounted and wired.



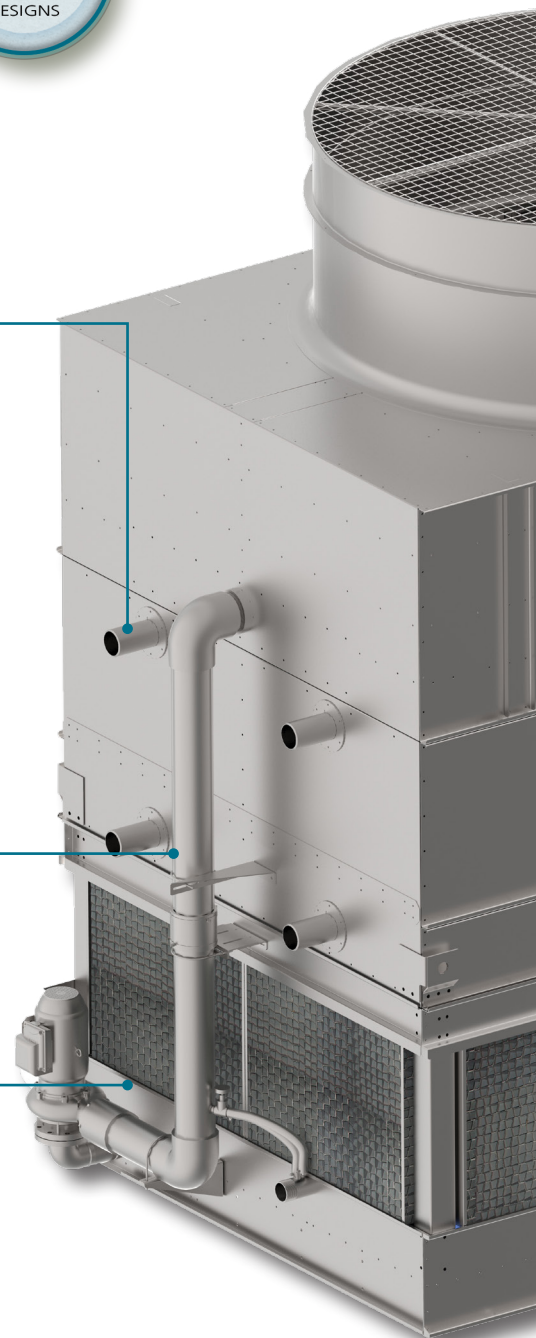
Most Accessible Basin

- Access from all four sides
- Large open area simplifies maintenance
- Basin may be inspected with pumps running



Louver Access Door

- Louver access door is available on models with 5ft (1.5m) and 6ft (1.8m) louver sizes
- Hinged access panel with quick-release mechanism
- Allows easy access to perform routine maintenance and inspection of the makeup assembly, strainer screen and basin



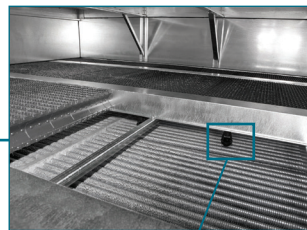
Super Low Sound Fan

- Extremely wide sloped fan blades for sound sensitive applications
- Molded heavy-duty construction
- 9-15 dB(A) sound reduction



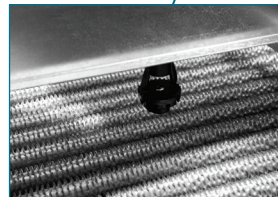
Unique Fan Drive System

- Power-Band belts for better lateral rigidity
- Advanced design aluminum fan blades
- Non-corroding cast aluminum sheaves
- Heavy-duty fan shaft bearings with L₁₀ life of 100,000 hrs.
- All other components constructed of corrosion resistant materials
- Totally enclosed fan motors assure long life



Efficient Drift Eliminators

- Advanced design minimizing drift from the leaving airstream
- Made from corrosion resistant PVC for long life



PVC Spray Distribution Header with ZM™II Nozzles

- Large orifice fixed-position nozzles prevent clogging



The EVAPCO Performance Guarantee

Every eco-ATWB product is rigorously tested for thermal performance by EVAPCO and then independently certified by the Cooling Tower Institute (CTI), so you know you're getting a solution that's guaranteed to get the job done.

† Mark owned by the Cooling Technology Institute



Water and Sight Tight (WST) Air Inlet Louvers

- Easily removable for access
- Improved design to keep sunlight out—preventing biological growth
- Keeps water in while keeping dirt and debris out

eco-ATWB-H Design & Construction Features



Super Low Sound Fan

- Extremely wide sloped fan blades for sound sensitive applications
- Molded heavy-duty construction
- 9-15 dB(A) sound reduction



ARID *fin Pak*™

Dry Cooling Coil

Featuring Copper Tubing with Aluminum Alloy Fins

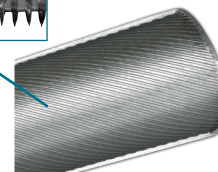
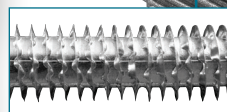
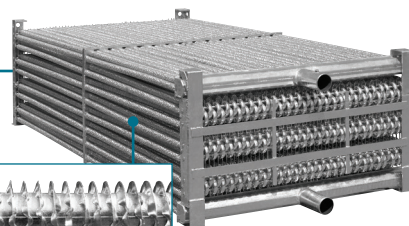
- Maximizes water efficiency
- Higher dry-bulb switchover temperatures
- Plume elimination in dry mode
- Plume abatement in evaporative mode
- Increases evaporative and dry cooling efficiency



Ellipti-fin®

Galvanized Steel Elliptical Spiral Fin Coil featuring **CROSSCOOL**™ Internal Tube Enhancement Technology

- Highly efficient closed circuit cooler coil in the HVAC industry!
- Up to **30% ADDITIONAL** evaporative capacity and HIGHER dry-bulb switchover temperatures
- All coil rows feature EVAPCO's finned Thermal-Pak® elliptical tube design
- Elliptical tube design results in lower airflow resistance than typical finned round tubes



CROSSCOOL™
INTERNAL TUBE ENHANCEMENT



Optional Factory Mounted Chemical Water Treatment System

The eco-ATWB-H is available with **Smart Shield**® (not shown) solid chemical water treatment system. The **Smart Shield**® is environmentally sensitive alternatives for treating water in evaporative cooled equipment. The **Smart Shield**® system includes all components required for an effective water treatment system; factory mounted and wired.



Efficient Drift Eliminators

- Advanced design minimizing drift from the leaving airstream
- Made from corrosion-resistant PVC for long life



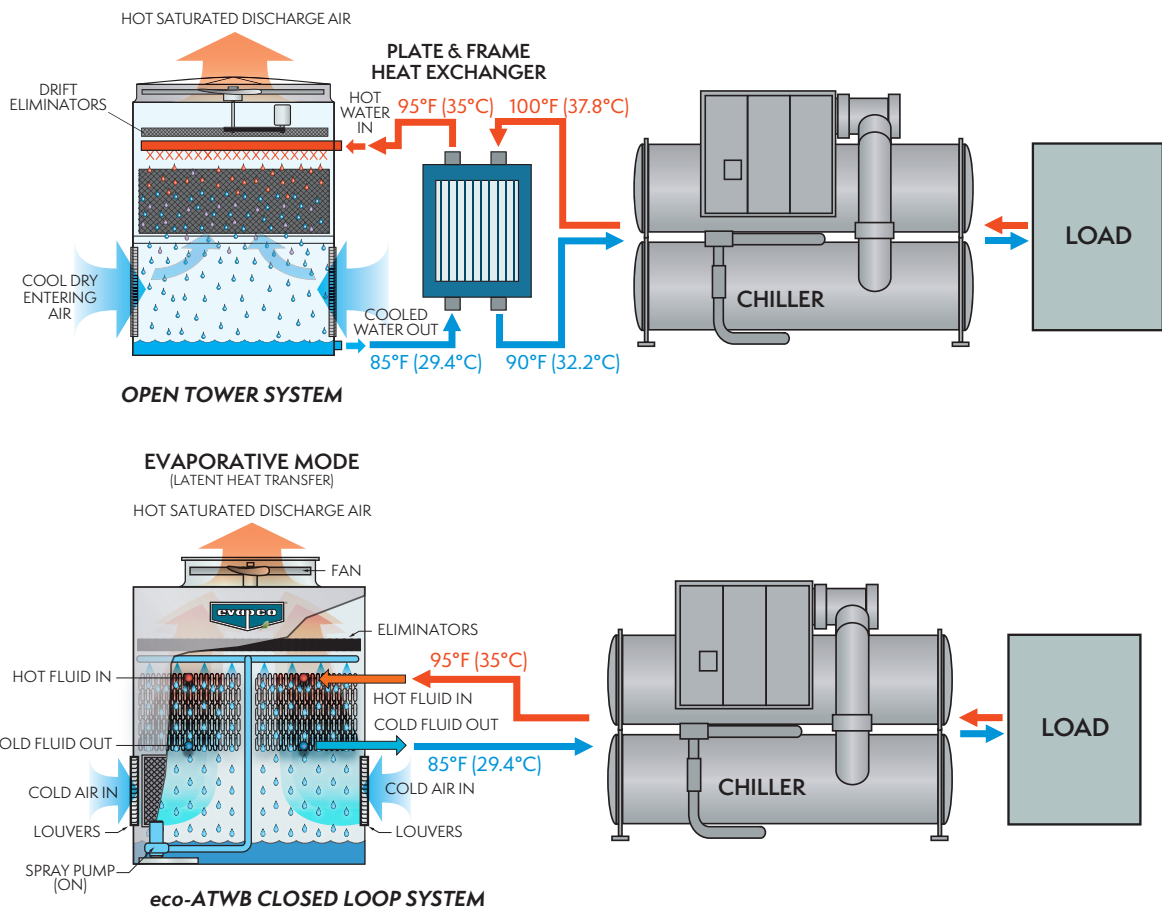
The EVAPCO Performance Guarantee

Every eco-ATWB-H product is rigorously tested for thermal performance by EVAPCO and then independently certified by the Cooling Tower Institute (CTI) so you know you're getting a solution that's guaranteed to get the job done.

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Closing the Loop

Open cooling tower systems are susceptible to fouling on the heat transfer surfaces due to the process water being open to the environment, and pulling in dirt and debris from the surrounding area. Often, when used in conjunction with a plate and frame heat exchanger, there is the need to oversize the tower to make up for the efficiency lost across the heat exchanger. By closing the process fluid in the coils of a closed circuit cooler, both of these issues are eliminated.



Low-Temperature Applications

Many closed circuit coolers and cooling towers are operated year round in temperatures that drop below freezing. Often, remote sump tanks are utilized to keep the basin water from freezing by moving the spray water supply from the basin of the unit to a storage tank located indoors. By providing heat rejection through dry operation at temperatures above freezing, the eco-Coolers negate the need to add a remote sump tank to a project. Additionally, operating an eco-Cooler in the dry mode in freezing conditions eliminates common problems such as ice formation on fill media and air inlet louvers.

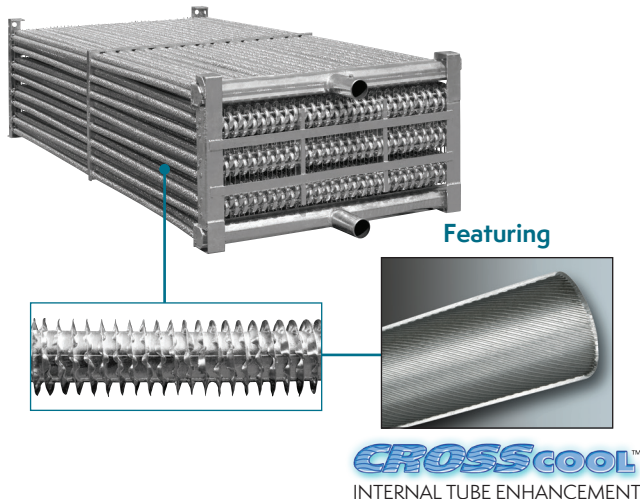
High-Temperature Applications

Many industrial applications have higher entering process fluid temperatures. A standard open cooling tower is limited by the fill at 130°F (54.4°C). The eco-ATWB line of closed circuit coolers can operate with inlet process fluid temperatures up to 170°F (76.7°C). Galvanized steel, as well as type 304 and type 316 stainless steel materials can be used in the construction of the basin, casing and coil(s), providing years of reliable operation and corrosion resistance.

NOTE: Some high-temperature applications require high-temperature-rated PVC materials. Please contact your local EVAPCO sales representative for high-temperature applications.

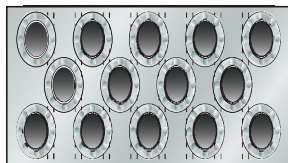
Innovation Design Features

Ellipti-fin® Heat Transfer Coil

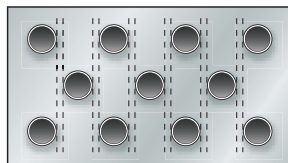


Galvanized steel elliptical Thermal-Pak® II coil featuring **CROSSCOOL™** Internal Tube Enhancement Technology

- Highly efficient closed circuit cooler coil in the HVAC industry
- Up to **30% ADDITIONAL** evaporative capacity and HIGHER dry-bulb switchover temperatures
- Internal tube enhancement provides additional evaporative capacity
- All rows finned
- Elliptical tube design results in lower airflow resistance than typical finned round tube designs



EVAPCO's Ellipti-fin® Finned Elliptical Tube



Competitors' Round-Tube Coil

The eco-Cooler line of closed circuit coolers utilize EVAPCO's Ellipti-fin® coil design, featuring **CROSSCOOL™** internal tube enhancement ensures even greater operating efficiency. The elliptical tube design allows for closer tube spacing, resulting in greater surface area per plan area than round-tube coil designs.

In addition, the revolutionary Ellipti-fin® design uses elliptical spiral fin coil technology and has lower resistance to air flow than typical finned coil designs. This permits greater water loading and increases the evaporative and dry cooling capacity of the coil. EVAPCO's **CROSSCOOL™** internal tube enhancement increases fluid turbulence through the coil, further increasing the evaporative capacity. The Ellipti-fin® coil featuring **CROSSCOOL™** is a highly efficient design available in the industry, providing up to **30% ADDITIONAL** evaporative capacity in the same box!

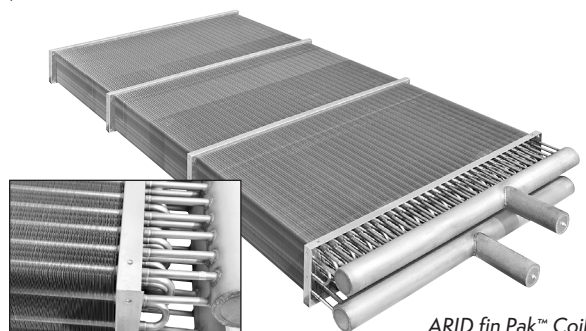
The coils are manufactured from high quality steel tubing following the most stringent quality control procedures. Each circuit is inspected to ensure the material quality and then tested before being assembled into a coil. Finally, the assembled coil is pneumatically tested at 390psig (2.69MPa) underwater to ensure it is leak free.

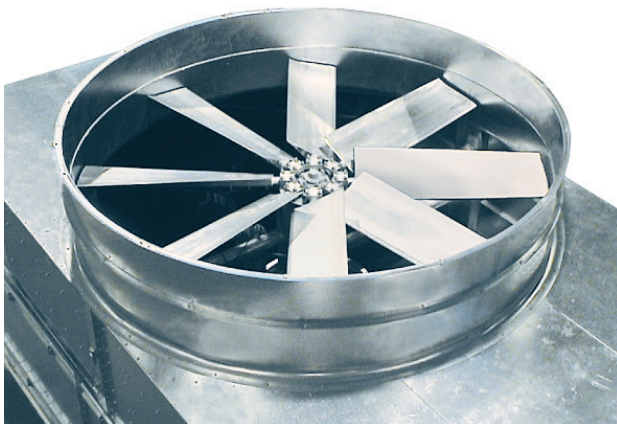
To protect the coil against corrosion, it is placed in a heavy steel frame and then the entire assembly is dipped into molten zinc (hot-dipped galvanized) at a temperature of approximately 800°F (427°C).

NOTE: Closed circuit coolers should only be used on sealed, pressurized systems. Continual aeration of the water in an open system can cause corrosion inside the tubes of the coil leading to premature failure.

ARID fin Pak™ Dry Cooling Coil

The eco-ATWB-H Closed Circuit Cooler utilizes the **ARID fin Pak™** Dry Cooling Coil. Installed in the air discharge of the cooler the **ARID fin Pak™** dry cooling coil is piped in series with the evaporative cooling coil. The **ARID fin Pak™** dry cooling coil is constructed of copper tubes and tubular copper header with carbon steel coil connections for easy field piping. The fins have fully drawn collars to maintain consistent fin spacing and continuous surface contact over the entire tube to maximize heat transfer. The fins are constructed of an aluminum alloy for superior corrosion resistance.





Smooth Flow Fans

Smooth flow axial propeller fans come standard on all eco-ATWB closed circuit coolers. Fan construction is dependent on unit size:

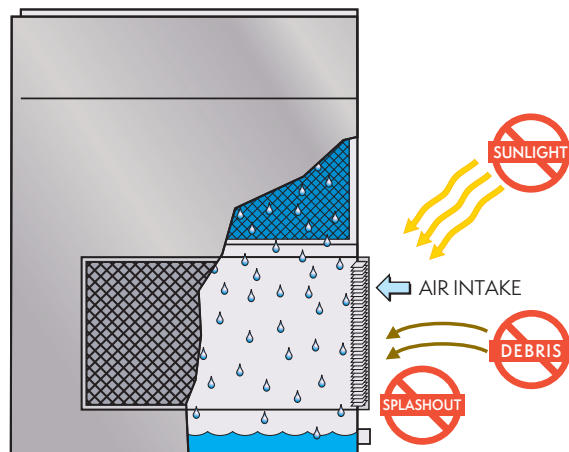
- 4-foot (1.2m) wide: Fiberglass-reinforced polypropylene wide chord blades with die-cast aluminum hub
- Over 4 feet (1.2m): 100% aluminum alloy fan blades

All fans are statically and dynamically balanced and installed in a closely fitted cowl with venturi air inlet for maximum efficiency. Fan screens are constructed of galvanized steel or optional type 304 stainless steel, and have steel frames bolted to the fan cowl.

Low sound and Super Low Sound Fan options are also available. See page 17 to learn more.

Pressurized Water Distribution System

The eco-ATWB product line's water distribution system is made of schedule 40 PVC pipe and ZM™II ABS plastic water nozzles for maximum corrosion protection. The piping is easily removable for cleaning. The water nozzles have a 1-5/16" (32mm) diameter opening to help eliminate costly clogging.



Superior Air Inlet Louver Screen Design

EVAPCO's Water and Sight Tight (WST) inlet louver screens keep water in and sunlight out of your eco-ATWB series closed circuit cooler. The unique, non-planar design is made from lightweight, framed PVC sections which have no loose hardware, enabling easy unit access. The louver's air channels are optimized to maintain fluid dynamic and thermodynamic efficiency and block all line-of-sight paths into the basin, eliminating splashout even when the fans are off. And because all sunlight is blocked, algae growth is minimized. The end result: reduced maintenance hours, water consumption, and water treatment costs.

Maintenance Free ZM™II Spray Nozzle Water Distribution System

EVAPCO'S Zero Maintenance ZM™II spray nozzle remains clog free while providing even and constant water distribution for reliable, scale-free evaporative cooling under all operating conditions.

The heavy-duty nylon ZM™II spray nozzles have a 1-5/16" (32mm) diameter opening. Furthermore, the fixed-position ZM™II nozzles are mounted in corrosion-free PVC water distribution pipes that have threaded end caps. Together, these elements combine to provide unparalleled coil coverage and scale prevention, making it the industry's excellent performing non-corrosive, maintenance-free water distribution system.

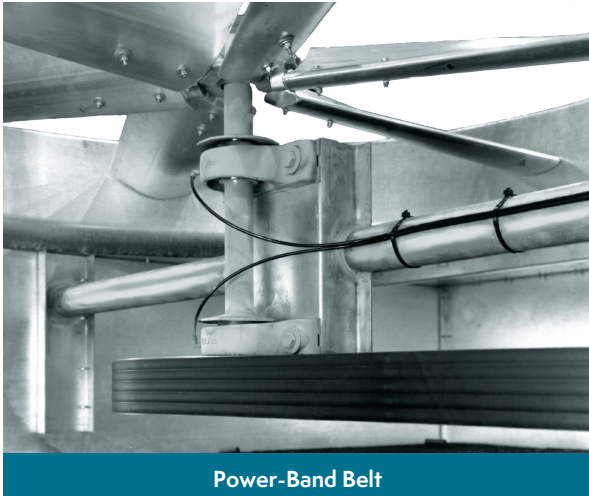


ZM™II Nozzle

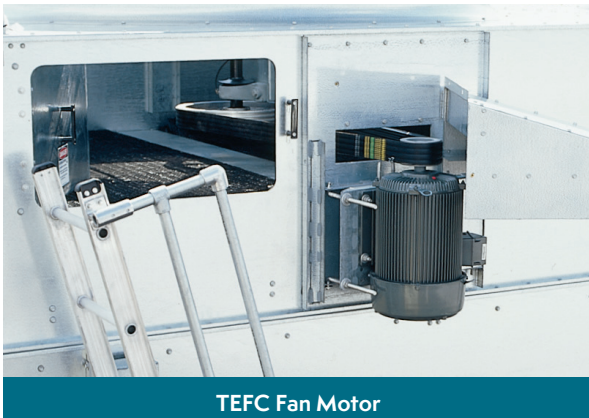
The Power-Band Belt Drive System

Power-Band Drive System Design

The eco-ATWB product line features the highly successful Power-Band Belt Drive System. The Power-Band Drive System has performed consistently with trouble-free operation in the most severe conditions of closed circuit cooler applications.



Power-Band Belt



TEFC Fan Motor



TEAO Fan Motor

Power-Band Drive System Includes:

- Solid back Power-Band drive belt
- Totally enclosed fan motors (TEFC or TEAO)
- Aluminum sheaves
- Fan shaft bearings with minimum L₁₀ life of 100,000 hrs.

Power-Band Belt Drive

The Power-Band drive is a solid-backed multi-groove belt designed for closed circuit cooler service. The drive belt is sized for 150 percent of the motor nameplate horsepower and constructed of neoprene with polyester chords. Band belts are field-proven with over 20 years of field operation.

Drive System Sheaves

Drive system sheaves are constructed of an aluminum alloy for corrosion resistance in the humid closed circuit cooler environment.

Fan Shaft Bearings

The fan shaft bearings are specially selected to provide long life, minimizing costly downtime. They are rated for a minimum L₁₀ life of 100,000 hours, making them the heaviest duty pillow block bearings in the industry.

Fan Motors

All EVAPCO closed circuit coolers utilize totally enclosed fan motors (TEFC or TEAO) designed specifically for evaporative cooling applications. Fan motors which are compatible with variable frequency drive (VFD) systems, come standard on all eco-ATWB & eco-ATWB-H models.

The Industry's Easiest Drive System Maintenance

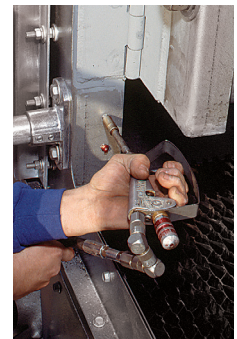
Standard Coolers - 8.5 Feet (2.5m) Wide or Less

The totally enclosed fan cooled (TEFC) motor is mounted on the outside and protected from the weather by a hinged cover that swings away for maintenance. A large, hinged access door is located on the side of the unit for easy access to the fan drive system. The belt can be adjusted by tightening the J-bolts on the motor base, and tension can be checked easily through the access door. The bearing lubrication lines have been extended to the exterior casing and are located by the access door, thus making bearing lubrication easy. Optional sloped maintenance ladders and working platforms are available to make maintenance even easier.



Large Coolers - Over 8.5 Feet (2.5m) Wide

The totally enclosed air over (TEAO) motor is located inside the fan casing and mounted on a unique, heavy-duty adjustable motor base that is designed to swing completely to the outside of the unit through a large, hinged access door (14 square feet/1.3 square meters). The belt can be easily adjusted from outside the unit via an all-thread that runs through the motor base, or via the motor base's unique locking mechanism if a wrench is not available. Bearing lubrication fittings are extended to the side of the unit inside the access door to allow for easy application of the bearing lubricant. To facilitate motor removal, an optional motor davit is available.



Worry Free Maintenance Basin Design



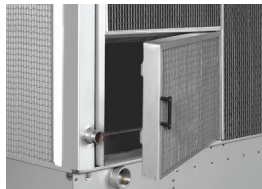
Easy Access

The cold water basin section is easily accessible from ground level by simply lifting out the lightweight louver. The basin can be accessed from all four sides of the closed circuit cooler, and the bottom of the fill section is a minimum of 4 feet (1.2 m) above the basin floor. This open design enables the basin to be easily cleaned.

NOTE: 4-foot (1.2m)-wide models are accessible on only two sides.

Louver Access Door

To aid in basin maintenance, most eco-Cooler models can be equipped with an optional louver access door. This allows easy access to perform routine maintenance and inspection of the makeup assembly, strainer screen, and basin without removing an entire inlet louver.



NOTE: This feature is standard on models with louvers 5 feet (1.5m) and taller and optional on models with 4-foot (1.2m)-tall louvers.

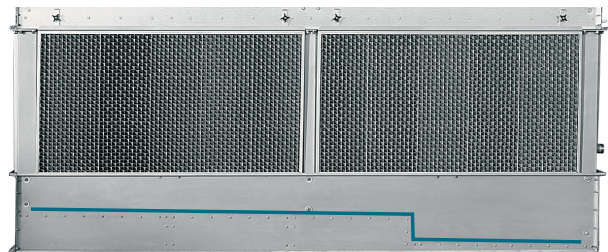
Electric Water Level Control (Optional)

Closed circuit coolers may be ordered with an electric water level control in lieu of the standard mechanical float and makeup assembly. This package provides accurate control of water levels and does not require field adjustment.



Stainless Steel Strainers

In evaporative cooling units, the strainer is subject to excessive wear and corrosion. All EVAPCO strainers are constructed with stainless steel—a long-standing EVAPCO standard—ensuring that yours will last the life of your closed circuit cooler.



Clean Pan Design

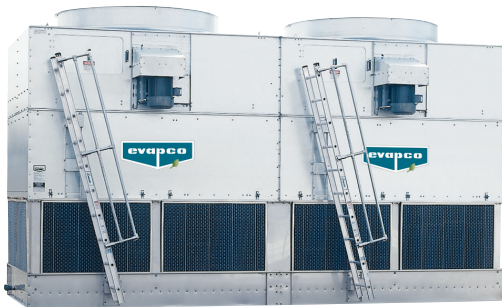
The eco-ATWB series also features a completely sloped basin from the upper to lower pan section. This “clean pan” design allows the water to be completely drained from the basin. The closed circuit cooler spray water will drain from the upper section to the depressed lower pan section where the dirt and debris can be easily flushed out through the drain. This design helps prevent buildup of sedimentary deposits and biological films, and minimizes standing water.

NOTE: On 4-foot (1.2m)-wide units, the pan is sloped without the step.

Optional Equipment

Sloped Maintenance Ladders

Designed by EVAPCO and OSHA compliant, this sloped “ships type” ladder enables visual inspection of the water distribution system and drive components. What’s more, all standard drive system maintenance can be performed from the ladder. A handrail is attached to the sloped ladder for safe and easy ascent and descent—no need for safety cages.

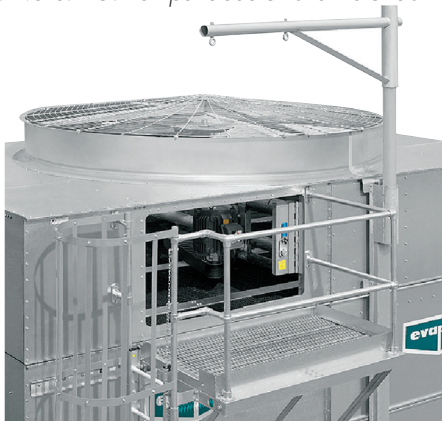


NOTE: Available on all models wider than 4 feet (1.2m). A vertical ladder is available for smaller models. Ladder ships loose and must be field mounted.

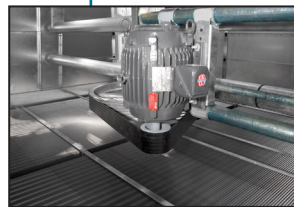
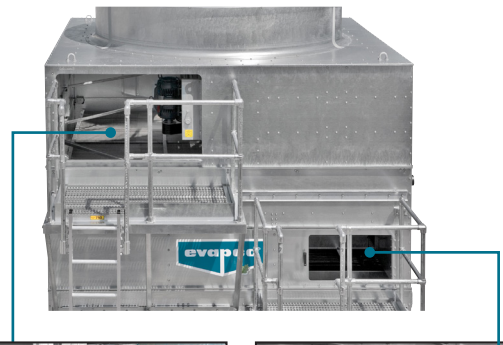
Working Platform & Ladder with Davit

Make it easy to service the fan motor and water distribution system with this heavy-duty, self-supporting working platform and standard ladder. A less expensive alternative to field erected catwalks, the system is OSHA compliant and ships in sections for easy installation. Note: The working platform is not available on 4-foot (1.2m)-wide models.

Eliminate crane rentals with an optional davit that facilitates the easy removal of motors, gear drives, and fans. The davit is constructed of aluminum and is mounted on the side of the unit with a galvanized steel bracket. Note: Davit ships loose and is installed in the field.



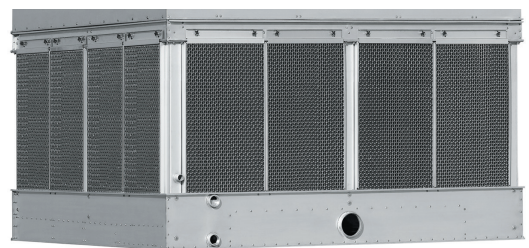
The eco-ATWB-H is available with a self-supported external working platform and ladder. Two separate platforms will allow easy access to the motor and drive system, water distribution system as well as the **ARID fin Pak™** coil. The working platforms are constructed of the heavy duty galvanized steel. The OSHA compliant working platform option uses a straight ladder as standard and ships in sections for easy installation.



Stainless Steel Basin

The basin area of the fluid cooler often experiences dirt and debris buildup. Type 304 or 316 stainless steel is available to provide increased corrosion protection for the entire basin area including the support columns of the cooler and the air inlet louver frames.

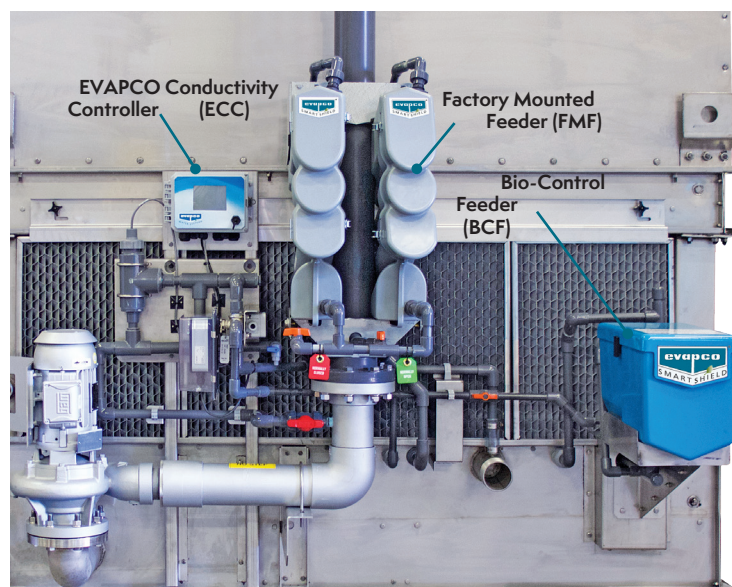
All Stainless Steel Option (Excluding Fans/Coils)



In addition to the basin, the remainder of the unit is constructed of type 304 or 316 stainless steel. When this option is selected the unit panel construction contains either type 304 or 316 stainless steel. Fan cylinder and fan screen are also constructed of the same material.



Smart Shield® Solid Chemical Water Treatment System



EVAPCO's **Smart Shield®** system utilizes proven solid chemistry delivered via our revolutionary feed system. With Controlled Release tablets, a scale and corrosion inhibitor is fed whenever your spray water pump is energized. Thus keeping your system protected anytime the spray water pump is operating.

Smart Shield® is a complete water treatment package that:

- Utilizes 'Bag in Bag' no touch chemical replenishments, making reloads easier and safer
- Creates reduced packaging, shipping and handling, providing a reduced carbon footprint compared to liquid chemicals
- Eliminates the hazards associated with liquid chemicals, potential for liquid spills, and the need for expensive feed pumps—making it the easiest and safest chemical water treatment system available today



Watch a short product video at
evapcoasia.com.

Optional Equipment: Low Sound Solutions

Super Low Sound Fan – 9-15 dB(A) Reduction

When you are tasked with achieving the lowest sound levels possible, there is only one choice: the EVAPCO Super Low Sound Fan. It's the quietest, most noise efficient fan in the industry—capable of reducing sound pressure level by 9 to 15 dB(A)!

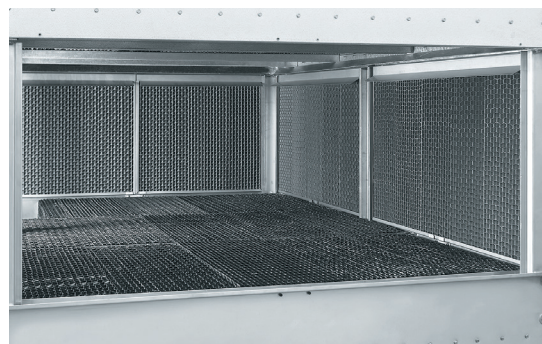
NOTE: Not available on 4-foot (1.2m)-wide models.



Water Silencer – Reduces Water Noise up to 7 dB(A)

Located in the cold water basin, EVAPCO's water silencers reduce the high frequency noise associated with falling water and are capable of lowering overall sound levels 4 to 7 dB(A) when measured at 5 feet (1.5m) from the side or end of the unit. When water is circulated with fans off, the results are even greater: as much as 9 to 12 dB(A) lower at the same measured distance (depending on water loading and louver height). Constructed of lightweight PVC sections, the silencers can be easily removed for access to the basin area. It will have no impact on thermal performance and is CTI certified.

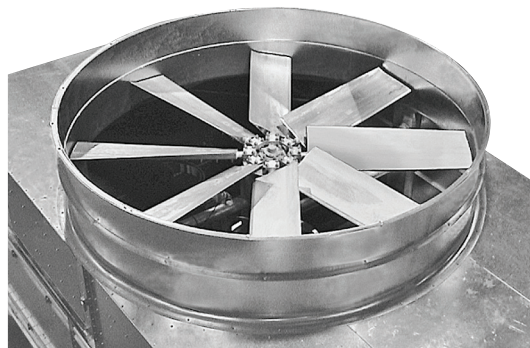
NOTE: Not available on 4-foot (1.2m)-wide models with Electronic Water Level Controller (EWLC) package.



Low Sound Fan – 4-7 dB(A) Reduction

Ideal for sound-sensitive applications, EVAPCO's low sound fan features a wide chord blade and a unique soft-connect blade-to-hub design that is compatible with variable speed drives. Since the blades are not rigidly connected to the fan hub, no vertical vibration forces are transmitted to the unit structure. This reduces sound pressure levels by 4 to 7 dB(A), depending on specific unit selection and measurement location.

The fan is a high efficiency axial propeller and is CTI certified. The low sound fan has a thermal performance derate of 3.5%. Consult your local EVAPCO sales representative for actual thermal performance.



Offset Sound Attenuation Walls

Add EVAPCO's CTI-certified offset sound attenuation walls to your super low sound fan and water silencer options for the ultimate sound control. Constructed of G-235 galvanized steel and lined inside with acoustical padding, the walls will typically reduce the 50-foot (15m) free-field sound level by an additional 3 dB(A). Stainless steel construction also available. Requires external support by others.

NOTE: Available only in combination with both Super Low Sound Fan and water silencer.



Optional Equipment: Electric Basin Heaters

Electric immersion heaters can be added to the basin of your eco-ATWB closed circuit cooler. They are sized to maintain a +40°F (4.5°C) pan water temperature with the fans and system pumps off. A thermostat and low-water protection device cycle the heater on when required and prevent the heater elements from energizing unless they are completely submerged. All components are protected by rugged, weatherproof enclosures for outdoor use.

eco-Coolers Heater Sizes *

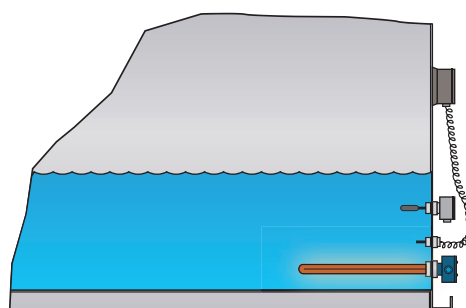
Unit No.	0°F/-18°C kW	-20°F/-29°C kW	-40°F/-40°C kW
eco-ATWB 4x6	(1) 3	(1) 4	(1) 5
eco-ATWB 4x9	(1) 4	(1) 5	(1) 7
eco-ATWB 4x12	(1) 5	(1) 7	(1) 9
eco-ATWB 7x9	(1) 6	(1) 8	(2) 6
eco-ATWB 7x12	(2) 4	(2) 6	(2) 8
eco-ATWB 7x18	(2) 6	(2) 8	(2) 12
eco-ATWB 7x24	(4) 4	(4) 6	(4) 8
eco-ATWB 7x36	(4) 6	(4) 8	(4) 12
eco-ATWB 14x9	(2) 6	(2) 8	(4) 6
eco-ATWB 14x12	(4) 4	(4) 6	(4) 8
eco-ATWB 14x18	(4) 6	(4) 8	(4) 12
eco-ATWB 9x8	(1) 6	(1) 7	(1) 9
†eco-ATWB 9x9	(1) 7	(1) 10	(1) 15
eco-ATWB 9x11	(1) 8	(1) 12	(1) 15
†eco-ATWB 9x12	(2) 4	(2) 7	(2) 9
†eco-ATWB 9x14	(2) 5	(2) 7	(2) 10
†eco-ATWB 9x18	(2) 6	(2) 9	(2) 12
†eco-ATWB 9x21	(2) 7	(2) 12	(2) 15
†eco-ATWB 17x12	(4) 4	(4) 7	(4) 9
†eco-ATWB 17x14	(4) 5	(4) 7	(4) 10
†eco-ATWB 10x12	(2) 5	(2) 8	(2) 10
†eco-ATWB 10x18	(2) 7	(2) 12	(2) 15
†eco-ATWB 10x24	(4) 5	(4) 8	(4) 10
†eco-ATWB 10x36	(4) 7	(4) 12	(4) 15
†eco-ATWB 20x12	(4) 5	(4) 8	(4) 10
†eco-ATWB 20x18	(4) 7	(4) 12	(4) 15
eco-ATWB 20x24	(4) 10	(4) 15	(4) 20
eco-ATWB 20x36	(4) 15	(6) 15	(6) 20

eco-Coolers Heater Sizes *

Unit No.	0°F/-18°C kW	-20°F/-29°C kW	-40°F/-40°C kW
†eco-ATWB 12x12	(2) 6	(2) 9	(2) 12
†eco-ATWB 12x14	(2) 7	(2) 10	(2) 15
†eco-ATWB 12x18	(2) 9	(2) 15	(2) 18
†eco-ATWB 12x20	(2) 10	(2) 15	(3) 15
†eco-ATWB 12x24	(4) 6	(4) 9	(4) 12
†eco-ATWB 12x28	(4) 7	(4) 10	(4) 15
†eco-ATWB 12x36	(4) 9	(4) 15	(4) 18
†eco-ATWB 12x40	(4) 10	(4) 15	(6) 15
†eco-ATWB 24x12	(4) 6	(4) 9	(4) 12
†eco-ATWB 24x14	(4) 7	(4) 10	(4) 15
†eco-ATWB 24x18	(4) 9	(4) 15	(4) 18
†eco-ATWB 24x20	(4) 10	(4) 15	(4) 20
eco-ATWB 24x24	(4) 12	(4) 18	(6) 15
eco-ATWB 24x28	(4) 15	(4) 20	(6) 18
eco-ATWB 24x36	(4) 18	(6) 18	(8) 18
eco-ATWB 24x40	(4) 20	(6) 20	(8) 20

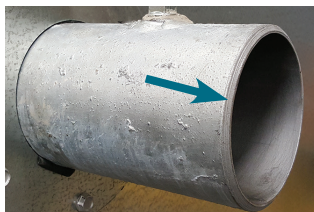
* Electric heater selection based on ambient air temperature shown.

† Also has eco-ATWB-H model.



NOTE: Heater control packages that include contactor, transformer, or disconnects are also available; speak to your local EVAPCO sales representative to learn more about these options.

Coil Connection Options



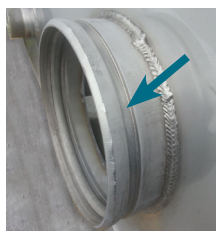
Beveled For Weld (BFW) Coil Connections

EVAPCO Closed Circuit Coolers are provided with Beveled For Weld (BFW) coil connections as standard. Beveled edges simplify field welding and allow welds to fully penetrate.



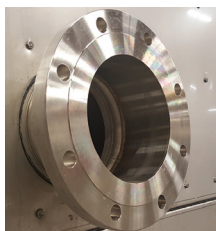
Optional Factory Mounted Crossover Piping

Some EVAPCO Closed Circuit Coolers are design for "series flow" coil operation where the coils inside of one cell are operated in series. These units are denoted by a "-Z" following the unit model number. These units require "crossover piping" from one coil to the other. As an option, this piping can be installed in the factory for simplified field installation.



Optional Grooved Coil Connections

Grooved connections can be provided as an optional coil connection. The groove allows for a mechanical coupling allowing for faster and easier field piping.



Optional Flanged Coil Connections

150# Raised Faced Flanged connections can be provided as an optional coil connection. The flanged coil connection allows for faster and easier field piping to a mating flanged connection. 300# flanged can be provided in some cases. Please see your local sales representative.



Optional Nitrogen Charged Coils

For projects requiring long term storage or ocean freight, coils can be nitrogen charged at the factory to prevent corrosion inside of the coil circuits.



Optional Male Pipe Thread (MPT) Coil Connections

Male Pipe Thread connections can be provided as an optional connection for mating with Female Pipe Thread (FPT) piping.

Note: All coil connections are constructed from the same material as the coil.

Heat Exchanger Coil / Discharge Hood Dimensions

Heat Exchanger Coil

The simplest and most foolproof method of protecting the heat exchanger coil from freeze-up is to use a glycol solution. If this is not possible, an auxiliary heat load must be maintained on the coil at all times so that the water temperature does not drop below 50°F/10°C when the cooler is shut down. Also, a minimum recommended flow rate per unit must be maintained.

Refer to Heat Loss Data Tables on pages 21 for heat loss data.

Minimum Flows	Standard Flow LPS	Series Flow LPS
4' (1.2m) Wide Models		
eco-ATWB 4x6 to 4x12	–	2.4
7' (2.2m) Wide Models		
eco-ATWB 7x9 to 7x18	8.9	4.5
eco-ATWB 7x24 to 7x36	17.7	8.9
8-1/2' (2.5m) Wide Models		
eco-ATWB 9x8, 9x11	10.1	5.1
†eco-ATWB 9x9, 9x12 to 9x21	10.1	5.1
10' (3m) Wide Models		
†eco-ATWB 10x12 to 10x18	11.9	6
†eco-ATWB 10x24 to 10x36	23.8	11.9
12' (3.6m) Wide Models		
†eco-ATWB 12x12 to 12x20	14.7	7.4
†eco-ATWB 12x24 to 12x40	29.3	14.7
14' (4.6m) Wide Models		
eco-ATWB 14x9 to 14x18	17.7	8.9
17' (5.2m) Wide Models		
†eco-ATWB 17x12 to 17x14	20.2	10.1
20' (6.1m) Wide Models		
†eco-ATWB 20x12 to 20x18	23.8	11.9
eco-ATWB 20x24 to 20x36	47.5	23.8
24' (7.3m) Wide Models		
†eco-ATWB 24x12 to 24x20	29.3	14.7
eco-ATWB 24x24 to 24x40	58.6	29.3

† Also has eco-ATWB-H model.

Discharge Hoods with Positive Closure Dampers

When a closed circuit cooler is used in a water-to-air heat pump system or in certain process cooling applications, a method of reducing the heat loss during idle periods of wintertime operation may be required. For these cases, an optional discharge hood with positive closure dampers and damper actuator is available.

The discharge hood with dampers is designed to minimize the heat loss from convective airflow through an idle cooler. Further reductions in heat loss may be obtained with the addition of insulation to the hood and casing, minimizing conductive heat losses. Insulation may be factory installed on the hood and casing or field installed by an insulation contractor.

The discharge hood and dampers are constructed of hot-dip galvanized steel. Hoods are equipped with access panels to facilitate maintenance of the eliminators and water distribution

system. The dampers, damper actuator and linkage are all factory assembled. Actuator controls and wiring are field supplied by others. Damper actuators require 120 volt power supply.

The system control sequence should allow for dampers to be fully open before the fans are running and closed when the fans are off; the damper actuator must be interlocked with the temperature control system for this purpose.

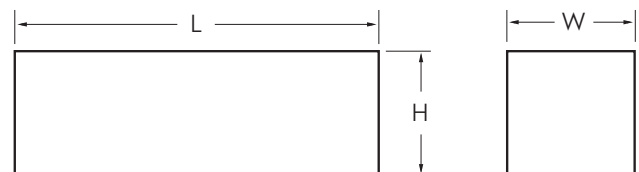
Heat loss data is provided for standard units without hoods, with hoods and with hoods and insulation. Table ratings are based on 50°F/10°C water in the coil, -10°F/-23°C ambient and 70km/hr winds (fan and pump off).

Discharge Hood Dimensions

Model	L (mm)	H* (mm)	W (mm)	Weight (kg)	Number of Hoods
eco-ATWB 4x6	1826	457	1226	163	1
eco-ATWB 4x9	2731	457	1226	231	1
eco-ATWB 4x12	3651	457	1226	299	1
eco-ATWB 9x8	2283	406	2578	386	1
†eco-ATWB 9x9	2727	406	2578	445	1
eco-ATWB 9x11	3188	406	2578	517	1
†eco-ATWB 9x12					
†eco-ATWB 9x14					
†eco-ATWB 9x18	2731	406	2578	889	2
†eco-ATWB 9x21	3188	406	2578	1,034	2
†eco-ATWB 17x12	3188	406	2578	962	2
†eco-ATWB 17x14					
†eco-ATWB 10x12	3648	356	3105	785	1
†eco-ATWB 10x18					
†eco-ATWB 10x24	3648	356	3105	1,569	2
†eco-ATWB 10x36					
†eco-ATWB 20x12					
†eco-ATWB 20x18					
eco-ATWB 20x24	3648	356	3105	3,139	4
eco-ATWB 20x36					
†eco-ATWB 12x12	3651	356	3607	816	1
†eco-ATWB 12x14					
†eco-ATWB 12x18					
†eco-ATWB 12x20					
†eco-ATWB 12x24	3651	356	3607	1,633	2
†eco-ATWB 12x28					
†eco-ATWB 12x36					
†eco-ATWB 12x40					
†eco-ATWB 24x12	3651	356	3607	1,633	2
†eco-ATWB 24x14					
†eco-ATWB 24x18					
†eco-ATWB 24x20					
eco-ATWB 24x24	3651	356	3607	3,266	4
eco-ATWB 24x28					
eco-ATWB 24x36					
eco-ATWB 24x40					

* Overall unit height will be height of the base unit plus the H dimension.

† Also has eco-ATWB-H model.



Heat Loss Data, kW

eco-ATWB Model	Standard Unit	Unit w/Hood	Hood and Insulation
4-3x6	65.9	15.8	10.3
4-4x6	79.7	17.3	11.1
4-5x6	89.7	18.8	12.0
4-3x9	100.2	21.4	13.5
4-4x9	121.3	23.1	14.7
4-5x9	136.2	24.9	15.8
4-3x12	134.5	26.7	17.0
4-4x12	162.9	28.7	18.5
4-5x12	183.1	31.1	19.9
7-3x9	189.6	-	-
7-4x9	229.4	-	-
7-5x9	257.8	-	-
7-6x9	274.5	-	-
7-3x12	254.6	-	-
7-4x12	308.2	-	-
7-5x12	346.3	-	-
7-6x12	368.6	-	-
7-3x14	298.0	-	-
7-4x14	360.7	-	-
7-5x14	405.2	-	-
7-6x14	431.3	-	-
7-3x18	384.7	-	-
7-4x18	465.6	-	-
7-5x18	523.0	-	-
7-6x18	556.7	-	-
7-3x24	509.2	-	-
7-4x24	616.5	-	-
7-5x24	692.4	-	-
7-6x24	737.2	-	-
7-3x28	596.0	-	-
7-4x28	721.4	-	-
7-5x28	810.4	-	-
7-6x28	862.6	-	-
7-3x36	769.1	-	-
7-4x36	931.2	-	-
7-5x36	1046.0	-	-
7-6x36	1113.7	-	-
9-3x8	177.6	30.5	19.6
9-4x8	214.8	32.5	20.8
9-5x8	241.4	34.9	22.3
9-6x8	257.0	37.2	23.7
9-3x9	216.8	35.5	22.9
9-4x9	262.2	37.8	24.3
9-5x9	294.8	40.4	25.8
9-6x9	313.8	42.8	27.2

eco-ATWB Model	Standard Unit	Unit w/Hood	Hood and Insulation
9-3x11	253.7	39.3	25.2
9-4x11	307.4	41.9	26.7
9-5x11	345.2	44.5	28.4
9-6x11	367.4	47.2	30.2
9-3x12	290.9	43.1	27.5
9-4x12	352.2	45.7	29.3
9-5x12	395.6	48.6	31.1
9-6x12	421.3	51.6	32.8
9-3x14	340.5	47.8	30.8
9-4x14	412.3	51.0	32.8
9-5x14	462.9	54.2	34.6
9-6x14	492.8	57.1	36.6
9-3x18	439.5	57.7	36.9
9-4x18	532.1	61.5	39.3
9-5x18	597.7	65.0	41.9
9-6x18	636.4	68.9	44.2
9-3x21	513.9	65.3	41.9
9-4x21	622.0	69.4	44.5
9-5x21	698.8	73.5	47.2
9-6x21	743.9	77.6	49.8
10-3x12	341.9	53.9	34.6
10-4x12	414.0	57.1	36.6
10-5x12	465.0	60.7	39.0
10-6x12	494.9	64.2	41.0
10-3x18	516.6	71.5	45.7
10-4x18	625.3	75.9	48.6
10-5x18	702.3	80.3	51.6
10-6x18	747.7	84.7	54.2
10-3x24	683.9	89.1	57.1
10-4x24	827.7	94.6	60.7
10-5x24	930.0	99.9	63.9
10-6x24	990.0	105.2	67.4
10-3x36	1032.8	124.5	79.7
10-4x36	1250.5	131.9	84.4
10-5x36	1404.6	138.9	89.1
10-6x36	1495.5	146.2	93.8
12-3x12	421.9	60.1	38.4
12-4x12	510.7	63.9	41.0
12-5x12	573.7	67.7	43.4
12-6x12	610.9	71.5	45.7
12-3x14	493.7	66.5	42.5
12-4x14	597.7	70.6	45.1
12-5x14	671.3	74.7	47.8
12-6x14	714.6	78.8	50.4
12-3x18	637.3	79.1	50.7
12-4x18	771.5	83.8	53.6
12-5x18	866.7	88.5	56.8
12-6x18	922.7	93.2	59.8

eco-ATWB Model	Standard Unit	Unit w/Hood	Hood and Insulation
12-3x20	709.1	85.6	54.8
12-4x20	858.5	90.5	58.0
12-5x20	964.3	95.5	61.2
12-6x20	1026.7	100.5	64.5
12-3x24	843.8	98.2	63.0
12-4x24	1021.4	103.7	66.5
12-5x24	1147.4	109.6	70.0
12-6x24	1221.5	115.1	73.8
12-3x28	987.4	110.8	70.9
12-4x28	1195.4	117.2	75.0
12-5x28	1342.8	123.4	79.1
12-6x28	1429.5	129.8	83.2
12-3x36	1274.8	136.2	87.3
12-4x36	1543.2	143.9	92.0
12-5x36	1733.4	151.2	97.0
12-6x36	1845.3	158.8	101.7
12-3x40	1418.4	148.8	95.5
12-4x40	1717.0	157.0	100.5
12-5x40	1928.8	165.3	105.8
12-6x40	2053.3	173.5	111.0
14-3x9	379.1	-	-
14-4x9	459.1	-	-
14-5x9	515.7	-	-
14-6x9	549.1	-	-
14-3x12	509.2	-	-
14-4x12	616.5	-	-
14-5x12	692.4	-	-
14-6x12	737.2	-	-
14-3x14	596.0	-	-
14-4x14	721.4	-	-
14-5x14	810.4	-	-
14-6x14	862.6	-	-
14-3x18	769.1	-	-
14-4x18	931.2	-	-
14-5x18	1046.0	-	-
14-6x18	1113.7	-	-
17-3x12	581.9	67.4	43.1
17-4x12	704.4	71.5	45.7
17-5x12	791.4	75.3	48.3
17-6x12	842.4	79.4	51.0
17-3x14	680.9	74.1	47.5
17-4x14	824.5	78.5	50.4
17-5x14	926.2	82.9	53.0
17-6x14	985.9	87.0	55.7
20-3x12	683.9	85.6	54.8
20-4x12	827.7	90.5	58.0
20-5x12	930.0	95.5	61.2
20-6x12	990.0	100.5	64.5

eco-ATWB Model	Standard Unit	Unit w/Hood	Hood and Insulation
20-3x18	1032.8	109.9	70.3
20-4x18	1250.5	115.7	74.1
20-5x18	1404.6	121.9	77.9
20-6x18	1495.5	127.7	81.7
20-3x24	1367.4	134.2	85.8
20-4x24	1655.5	141.2	90.2
20-5x24	1859.7	148.0	94.9
20-6x24	1979.8	155.0	99.3
20-3x36	2065.9	182.8	117.2
20-4x36	2501.0	191.6	122.8
20-5x36	2809.3	200.4	128.3
20-6x36	2990.9	209.2	133.9
24-3x12	843.8	98.2	63.0
24-4x12	1021.4	103.7	66.5
24-5x12	1147.4	109.6	70.0
24-6x12	1221.5	115.1	73.8
24-3x14	987.4	107.2	68.6
24-4x14	1195.4	113.1	72.4
24-5x14	1342.8	119.3	76.2
24-6x14	1429.5	125.1	80.0
24-3x18	1274.8	125.1	80.3
24-4x18	1543.2	131.9	84.4
24-5x18	1733.4	138.3	88.8
24-6x18	1845.3	145.0	92.9
24-3x20	1418.4	134.2	85.8
24-4x20	1717.0	141.2	90.2
24-5x20	1928.8	148.0	94.9
24-6x20	2053.3	155.0	99.3
24-3x24	1687.7	152.1	97.6
24-4x24	2043.1	159.7	102.3
24-5x24	2294.8	167.3	107.2
24-6x24	2443.3	174.9	111.9
24-3x28	1974.8	170.2	109.0
24-4x28	2390.9	178.4	114.3
24-5x28	2685.6	186.6	119.5
24-6x28	2859.1	194.6	124.8
24-3x36	2549.4	206.3	132.1
24-4x36	3086.5	215.6	138.0
24-5x36	3466.8	225.0	144.2
24-6x36	3690.9	234.4	150.3
24-3x40	2836.8	224.1	143.6
24-4x40	3434.0	234.1	150.0
24-5x40	3857.3	244.4	156.5
24-6x40	4106.7	254.3	162.9

General Information

Design

EVAPCO closed circuit coolers are of heavy-duty construction and designed for long trouble-free operation. Proper equipment selection, installation and maintenance is, however, necessary to ensure full unit performance. Some of the major considerations in the application of a cooler are presented below. For additional information, contact the factory.

Air Circulation

It is important that proper air circulation be provided. The best location is on an unobstructed roof top or on ground level away from walls and other barriers. Those closed circuit coolers located in wells, enclosures or adjacent to high walls must be properly located to avoid the problems associated with recirculation.

Recirculation raises the wet bulb temperature of the entering air causing the water temperature to rise above the design. For these cases, the discharge of the unit should be located at a height even with the adjacent wall, thereby reducing the chance of recirculation. For additional information, see the EVAPCO equipment layout manual.

Good engineering practice dictates that the closed circuit cooler discharge air not be directed or located close to or in the vicinity of building air intakes.

Piping

Cooler piping should be designed and installed in accordance with generally accepted engineering practices. The piping layout should be symmetrical on multiple unit systems, and sized for a reasonably low water velocity and pressure drop.

The standard closed circuit cooler is recommended only on a closed, pressurized system. The piping system should include an expansion tank to allow for fluid expansion and purging air from the system.

Note: closed circuit coolers should never be used on an open type system. An open type system with a cooler may result in premature coil failure.

The piping system should be designed to permit complete drainage of the heat exchanger coil. This will require a vacuum breaker or air vent to be installed at the high point and a drain valve installed at the low point of the piping system. Both must be adequately sized.

All piping should be securely anchored by properly designed hangers and supports. No external loads should be placed upon the cooler connections, nor should any of the pipe supports be anchored to the cooler framework.

Recirculating Water Quality

Proper water treatment is an essential part of the maintenance required for evaporative cooling equipment. A well designed and consistently implemented water treatment program will help to ensure efficient system operation while maximizing the equipment's service life. **If EVAPCO factory mounted water systems are not utilized**, a qualified water treatment company should design a site specific water treatment protocol based on equipment (including all metallurgies in the cooling system), location, makeup water quality, and usage.

Bleed off

Evaporative cooling equipment requires a bleed or blowdown line, located on the discharge side of the recirculating pump, to remove concentrated (cycled up) water from the system. EVAPCO recommends an automated conductivity controller to maximize the water efficiency of your system. **If EVAPCO factory mounted water systems are not utilized**, based on recommendations from your water treatment company, the conductivity controller should open and close a motorized ball or solenoid valve to maintain the conductivity of the recirculating water. If a manual valve is used to control the rate of bleed it should be set to maintain the conductivity of the recirculating water during periods of peak load at the maximum level recommended by your water treatment company.

Water Treatment

The water treatment program prescribed for the given conditions must be compatible with the unit's materials of construction, including any galvanized components. The initial commissioning and passivation period is a critical time for maximizing the service life of galvanized equipment. EVAPCO recommends that the site specific water treatment protocol includes a passivation procedure which details water chemistry, any necessary chemical addition, and visual inspections during the first six (6) to twelve (12) weeks of operation. During this passivation period, recirculating water pH should be maintained above 7.0 and below 8.0 at all times. Batch feeding of chemicals is not recommended.

Control of Biological Contaminants

Evaporative cooling equipment should be inspected regularly to ensure good microbiological control. Inspections should include both monitoring of microbial populations via culturing techniques and visual inspections for evidence of biofouling.

Poor microbiological control can result in loss of heat transfer efficiency, increase corrosion potential, and increase the risk of pathogens such as those that cause Legionnaires' disease. Your site specific water treatment protocol should include procedures for routine operation, startup after a shut-down period, and system lay-up, if applicable. If excessive microbiological contamination is detected, a more aggressive mechanical cleaning and/or water treatment program should be undertaken.

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