



**NEW!**

**AAT**

**C O O L I N G T O W E R S**



NOW  
AVAILABLE  
WITH  
**LOW SOUND  
SOLUTIONS**  
(SEE PAGE 10)

**A**DVANCED **T**ECHNOLOGY IN  
INDUCED DRAFT, COUNTERFLOW COOLING TOWERS  
**479 to 13.242 kW**  
**208 New AT Models**

*EASY SOLUTIONS... BETTER CHOICES!*

**C E R T I F I E D I S O 9 0 0 0**



# A NEW ADVANCED TECHNOLOGY DESIGN

**EVAPCO, Inc.**, is continuing its dedication to advancements in induced draft, counterflow cooling tower technology and easy maintenance, by proudly introducing the **NEW Advanced Technology Cooling Tower...the NEW AT!**

The **NEW AT** is the result of a decade of engineering success based on easy maintenance, durable construction and a highly efficient design. The **NEW AT** brings the same marquee features that the original AT is known for—plus more! More features that make the **NEW AT** the better choice in cooling towers.



Since its founding in 1976, EVAPCO, Inc. has become a world-wide leader in supplying quality cooling equipment for thousands of customers in both the commercial and industrial markets.

EVAPCO's success has been the result of a continual commitment to product improvement, quality workmanship and a dedication to providing unparalleled service.

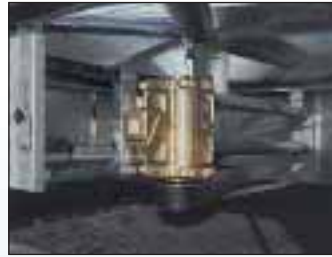


Our emphasis on research and development has led to many product innovations – a hallmark of EVAPCO through the years.

The ongoing R & D Program enables EVAPCO to provide the most advanced products in the industry – technology for the future, available today.

With 13 facilities in seven countries and over 160 sales offices in 40 countries world-wide, EVAPCO is ready to assist in all your equipment needs.

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### Totally Enclosed Fan Motors

- Motors positioned for external access.
- Assures long life.
- Motor location allows for easy accessibility and serviceability.

### EVAPCO Power-Band Drive System

- The AT Cooling Tower features the highly successful, easy maintenance, heavy duty Power Band Drive System.
- Standard heavy-duty pillow block bearings with a minimum L10 life of 75,000 hours.
- Extended lube lines.
- External motor/belt adjustment.
- Aluminum Alloy Sheaves, Solid-Back Multi-Groove Power-Band Belts and Totally Enclosed motors are standard.

### Clean Pan Sloped Basin Design

- Designed to completely drain the cold water basin.
- Helps prevent buildup of sediment and biological film.
- Eliminates standing water after drain down.  
(See details of design on page 6)



### Quick Connect Piping System

- All inlet and outlet piping connections are beveled for welding and grooved to accept a mechanical coupling device as standard.
- Facilitates easy pipe connections for quick installation.
- Flanged connections are available as an option.  
(See page 9 Optional Equipment)



### EVAPCOAT Corrosion Protection System

- Z-725 Galvanized Steel Construction and Stainless Steel Strainers—EVAPCO sets the standard again with 725 grams of zinc per m<sup>2</sup> of surface area.
- Another EVAPCO standard—the stainless steel suction strainer eliminates excessive wear and corrosion.
- Non-corrosive PVC Water Distribution System, Drift Eliminators and Inlet Louvers.
- This system provides maximum corrosion protection as standard.



# IGN PROVIDING EASIER SOLUTIONS AND BETTER CHOICES

Available in 26 Cross Sections. The New AT has a model for every application.

- Consult the *NEW AT Engineering Manual Bulletin 350* and the *ES II Equipment Selection Program* for Selections and Technical Assistance including Applications, Layout, and Structural Steel Support.
- If there is an application for which the the standard catalog product line does not work, EVAPCO will make a cooling tower that will fit your requirement! Contact the factory.
- Consult page 10 of this bulletin or the *AT Low Sound Solutions Bulletin No. 650-EU* for more information on Advanced Technology Low Sound Solutions.

## Super Low Sound Fan Option

9 – 15 dB(A) Reduction versus Standard Fan!

The Super Low Sound Fan offered by EVAPCO utilizes an extremely wide chord blade design available for sound sensitive applications where the lowest sound levels are desired. The fan is one-piece molded heavy duty FRP construction utilizing a forward swept blade design. The Super Low Sound fan is capable of reducing the unit sound pressure levels **9 dB(A) to 15 dB(A)**, depending on specific unit selection and measurement location. The fans are high efficiency axial propeller type and operate with no loss of thermal performance.

*The Super Low Sound Fan is available on all 2,4 m wide AT Cooling Towers, ATW Closed Circuit Coolers and ATC Evaporative Condensers.*



EVAPCO unequivocally guarantees the thermal performance of the AT cooling tower product line.



## Quick Release Louver Fasteners

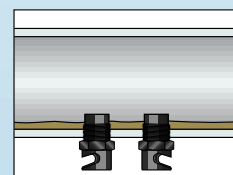
- New design allows quick removal of louvers.
- Louver fastener is large and easy to release.
- Louver fastener remains on the unit—eliminating the possibility of missing hardware.

## AT Water Silencer Option

Reduces Falling Water Noise up to 7 dB(A)!

The water silencer option is available for all AT cooling tower models and is located in the falling water area of the cooling tower cold water basin. The water silencer will reduce the high frequency noise associated with the cooling tower falling water and is capable of reducing overall sound levels **4 dB(A) to 7 dB(A)** measured at 1.5m from the side or end of the unit. The water silencers reduce overall sound levels **9 dB(A) to 12 dB(A)** (depending on water loading and louver height) measured 1.5m from the side or end of the unit when water is circulated with fans off.

The water silencers are constructed of lightweight PVC sections and can be easily removed for access to the basin area. *The water silencer will have no impact on unit thermal performance.*



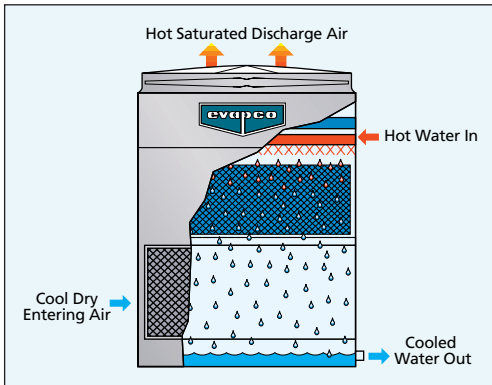
## Water Distribution System

- Non-corrosive PVC construction with ABS nozzles.
- Large orifice nozzles prevent clogging and are threaded for easy removal.
- "Anti-Sludge" ring prevents sediment from clogging the diffuser opening.
- System branches have threaded end caps to assist with debris removal.

# AT DESIGN FEATURES

## The Advanced Technology Design

The NEW AT Cooling Tower product line is an Advanced Technology design which utilizes induced draft, counterflow technology—the most efficient in the industry and the best design for operation in a freezing climate. The counterflow design provides the AT Cooling Tower with inherently better operational and maintenance features. These features are described below.



### Principle of Operation

Warm water from the heat source is pumped to the water distribution system at the top of the tower. The water is distributed over the wet deck fill by means of large orifice nozzles. Simultaneously, air is drawn in through the air inlet louvers at the base of the tower and travels upward through the wet deck fill opposite the water flow. A small portion of the water is evaporated which removes the heat from the remaining water. The warm moist air is drawn to the top of the cooling tower by the fan and discharged to the atmosphere. The cooled water drains to the basin at the bottom of the tower and is returned to the heat source.

The vertical air discharge of the AT design and the distance between the discharge air and fresh air intakes, reduces the chance of air recirculation, since the warm humid air is directed up and away from the unit. For detailed layout information please consult EVAPCO's Equipment Layout Guidelines Bulletin 311.

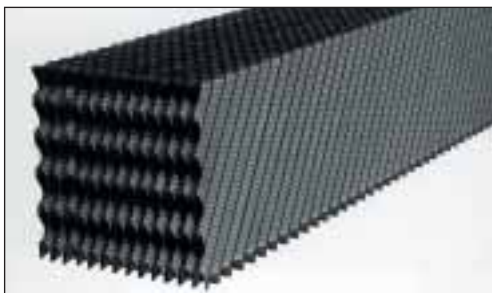


### Efficient Drift Eliminators

An extremely efficient drift eliminator system is standard on the AT Cooling Tower. The system removes entrained water droplets from the air stream to limit the drift rate to less than 0.001% of the recirculating water rate.

With a low drift rate, the AT Cooling Tower saves valuable water and water treatment chemicals. The AT can be located in areas where minimum water carryover is critical, such as parking lots.

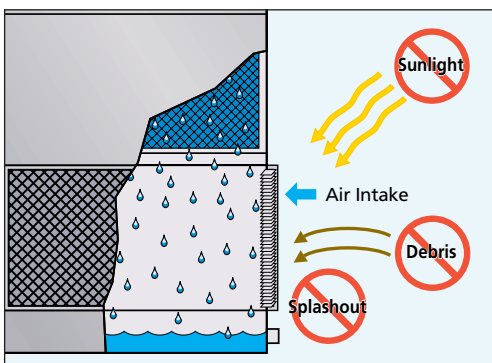
The drift eliminators are constructed of an inert polyvinyl chloride (PVC) plastic material which effectively eliminates corrosion of these vital components. They are assembled in sections to facilitate easy removal for inspection of the water distribution system.



### Cooling Tower Fill

The film type fill design used in the AT Cooling Tower line is specially designed to induce highly turbulent mixing of the air and water for heat transfer. Special drainage tips allow high water loadings without excessive pressure drop. The fill is constructed of inert polyvinyl chloride, (PVC). It will not rot or decay and is formulated to withstand water temperatures of 55°C. The fill also has excellent fire resistant qualities providing a flame spread rating of 5 per ASTM-E84-81a. (The flame spread rating scale ranges from 0 for non-combustible to 100 for highly combustible). Because of the unique way in which the cross-fluted sheets are bonded together, the structural integrity of the fill is greatly enhanced, making the fill usable as a working platform.

A high temperature fill is available for water temperatures exceeding 55°C. Consult your EVAPCO representative for further details.



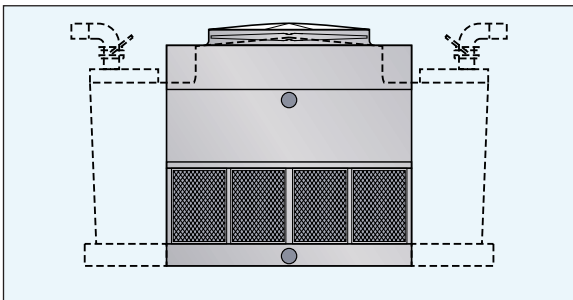
### Superior Air Inlet Louver and Screen Design

The air inlet louver screens on the AT are constructed of corrosion-free PVC. They are a two pass design that minimizes splashout and reduces the potential for algae formation inside the tower.

In single pass louver systems used by other manufacturers, circulating water droplets tend to splashout, especially when the fans are shut off. With the two pass louver system, the water droplets are captured on the inward sloping pass, minimizing splashout problems.

This unique louver design completely encloses the basin area. Direct sunlight is blocked from the water inside the cooling tower, thereby reducing the potential of algae formation. Water treatment and maintenance costs are substantially reduced.

While effectively containing the recirculating water and blocking sunlight, the louver design has a low pressure drop. The low pressure drop results in lower fan energy consumption, which reduces the operating costs of the cooling tower.



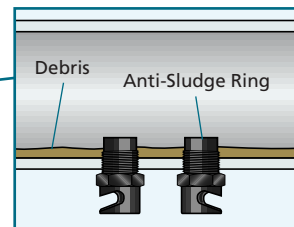
### Reduced Piping Costs

Each cell of the AT Cooling Tower is furnished with one inlet and one outlet piping connection. This design reduces the amount of external piping and thereby lowers the installed cost of the cooling tower. The water distribution system is pressurized and self balancing. Since field balancing is not required on the AT, the need for flow balancing valves is eliminated, further reducing the cost of tower installation. The wide orifice nozzles with anti-sludge ring used in the AT water distribution system helps prevent clogging, reducing the maintenance costs of the water distribution system.

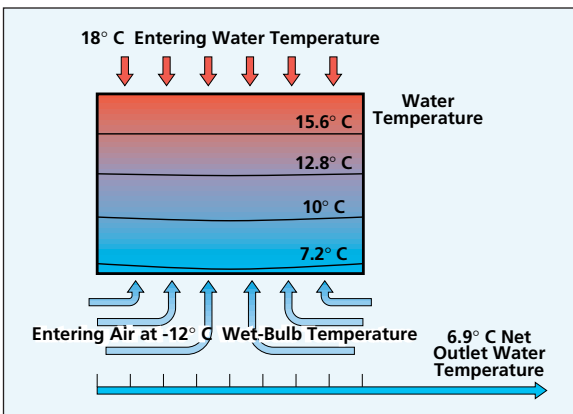


### Pressurized Water Distribution System

The water distribution system is made of schedule 40 PVC pipe and ABS plastic water diffusers for corrosion protection in this key area. The piping is easily removable for cleaning. The water diffusers have a minimum opening of 25 x 10 mm and are practically impossible to clog. They also have an anti-sludge ring extending into the headers to prevent sediment from building up in the diffuser opening. In addition, the spray branches have threaded end caps to allow easy debris removal.



The spray pressure for all AT Cooling Towers is between 7 and 42 kPa at the inlet header. The actual spray pressure will be shown on the certified drawings which are prepared for each unit.



### Optimum Design for Freezing Climates

The counterflow fill design used in the AT Cooling Tower is well suited for winter operation. The wet deck surface is totally encased, and protected from freezing winds thus inhibiting ice formation on the fill section.

The even temperature gradient of the counterflow fill design makes the AT Cooling Tower the ideal unit for operation in freezing climates.

The counterflow design of the AT Cooling Tower fill section reduces the chance of ice formation and with bottom support, eliminates fill collapse should ice form.



### Fast, On-Time Shipments

The AT is a completely factory assembled cooling tower manufactured by a dedicated professional workforce, expert in building cooling towers. Factory trained mechanics and EVAPCO's strict quality control and inspection procedures guarantee the quality of every unit shipped.

EVAPCO's controlled factory environment ensures fast on-time shipments, allowing the AT to be available WHEN THE CUSTOMER WANTS IT!



# AT MAINTENANCE FEATURES

## The Advanced Technology Easy Maintenance Basin Design

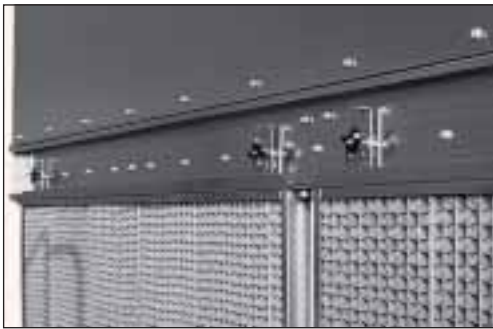
The cold water basin is the most important area of a cooling tower to maintain. As a result of the evaporation process in a cooling tower, dirt and debris will collect in the basin and must be cleaned out on a regular basis. EVAPCO's *NEW AT* basin section is designed to allow quick and easy access -promoting maintenance of the cold water basin. The basin features the following:



### Easy Access

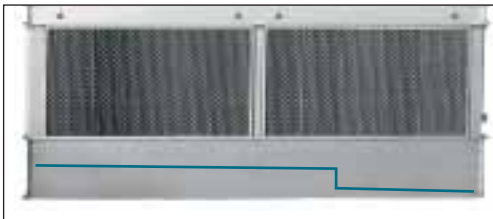
The cold water basin section is easily accessible from ground level by simply removing the (2) two Quick Release Fasteners on the inlet louver assemblies surrounding the cooling tower and lifting out the lightweight louver.

The basin can be accessed from all (4) four sides of the cooling tower. The bottom of the fill section is a minimum of 0.9 m above the basin floor. This open basin design enables the AT basin to be easily cleaned.



### Easy, Removable Air Inlet Louvers with Quick Release Fasteners

The *NEW AT* features a Quick Release Fastener design consisting of (2) two large thumbscrews and a latch system. By loosening the thumbscrews, the latch pulls up and out of the louver frame, allowing the louver to be removed while the latch and thumbscrews stay on the cooling tower.



### Clean Pan Basin Design

The *NEW AT* 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 cooling tower 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, biological films and minimizes standing water.



### Stainless Steel Strainers

The EVAPCO standard for many years, the stainless steel strainer is one component of the cooling tower subject to excessive wear and corrosion. With stainless steel construction, this component will last the life of the cooling tower.

# MAINTENANCE FEATURES **AT**

## The Advanced Technology Easy Maintenance Drive System

The EVAPCO POWER-BAND drive system utilized on the New AT Cooling Tower is the *easiest* belt drive system to maintain in the industry. There is no need to stand inside the cold water basin to service the bearings, belts or electrical equipment. In addition, there is no need for fan deck handrails or safety cages, since all periodic maintenance can be safely performed from the side of the AT. The most important features of this design are listed below.

### Models AT 19-56 through AT 38-942

#### Motor Mount, Power Band Belt Adjustment and Bearing Lubrication

The fan motor and drive assembly are designed to allow easy servicing of the motor and adjustment of the belt tension from the exterior of the unit. The T.E.F.C fan motor is mounted on the outside on these models and is protected from the weather by a cover which 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 the tension can be checked easily through the access door, all while standing at the side of the unit. The bearings can also be lubricated from the side of the unit. The bearing lubrication lines have been extended to the exterior casing and are located by the access door, thus making bearing lubrication easy.



### Models AT 112-012 through AT 424-936

#### Motor Mount, Power Band Belt Adjustment and Bearing Lubrication



The T.E.A.O. fan motor is located inside the fan casing on the large AT Cooling Tower, and is mounted on a rugged heavy duty motor base. The motor base is designed to swing completely to the outside of the unit through a very large hinged (1,3 m<sup>2</sup>) access door greatly simplifying motor maintenance.

The unique swinging motor mount designed for these models features easy belt adjustment from the exterior of the unit. The T.E.A.O. fan motor is mounted on an adjustable base which is supported by two heavy duty galvanized steel pipes. The belt is adjusted by tightening an all-thread which runs through the motor base.

The innovative motor base features a unique locking mechanism for a positive belt adjustment and is also used to adjust the belt tension if a wrench is not available.

Bearing lubrication fittings are extended to the side of the unit inside the access door to allow easy application of the bearing lubricant. This external location allows for easy servicing of the bearings and is another important advantage of EVAPCO equipment.



# AT DRIVE SYSTEM DESIGN

## The Advanced Technology POWER-BAND Drive System Design

The NEW AT Cooling Tower features the highly successful EVAPCO POWER-BAND Belt Drive System engineered for heavy-duty operation. The POWER-BAND Drive System has consistently provided trouble-free operation in the most severe duty cooling tower applications.



### Fan Motors

All AT Cooling Tower models utilize heavy duty totally enclosed (T.E.F.C. or T.E.A.O) fan motors designed specifically for cooling tower applications. In addition to the standard motors offered on each cooling tower, EVAPCO offers many optional motors to meet your specific needs, including:

- Multi-Speed Motors
- Inverter-Duty Motors for VFD Applications

The T.E.F.C. motors are located on the outside of the unit on Models AT 19-56 through AT 38-942 and are protected by a hinged, swing away cover.

Models AT 112-012 through 424-936 have T.E.A.O. motors located inside the fan section on a heavy duty motor base which swings to the outside for repair or removal.

On Models AT 19-56 through 38-942



On Models AT 112-012 through 424-936



### Power-Band Belt Drive

The Power-Band drive is a solid-back multigroove belt system that has high lateral rigidity. The belt is designed for cooling tower service, and is constructed of neoprene with polyester cords. The drive belt is sized for 1.5 service factor of the motor nameplate kW ensuring long and trouble free operation.

### Drive System Sheaves

Drive system sheaves located in the warm, moist atmosphere inside the cooling tower are constructed of an aluminum alloy. Those located externally are protected by a hinged protective cover.

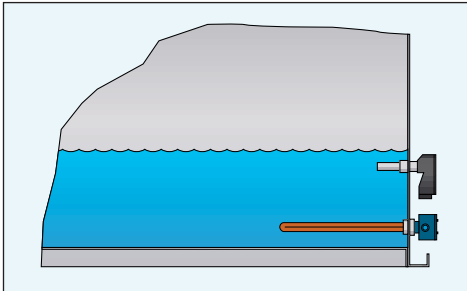
### Fan Shaft Bearings

The fan shaft bearings on the AT cooling tower are specially selected to provide long life, minimizing costly downtime. They are rated for an L-10 life of 75,000 to 135,000 hours, making them the heaviest duty pillow block bearing in the industry used for cooling tower duty.

## OPTIONAL EQUIPMENT

### Optional Equipment for Easier Operation and Maintenance

The standard design of the *NEW* EVAPCO AT provides the customer with the *easiest* cooling tower to maintain in the industry. There are additional options which can make maintenance and unit operation easier and extend the life of the cooling tower. These options are listed below.



#### Electric Heaters

Electric immersion heaters are available factory installed in the basin of the cooling tower. They are sized to maintain a +4 or +5°C pan water temperature with the fans off and an ambient air temperature of -18°C. They are furnished with a combination thermostat/low water protection device to cycle the heater on when required and to prevent the heater elements from energizing unless they are completely submerged. All components are in weather proof enclosures for outdoor use. The heater power contactors and electric wiring are not included as standard.



#### Electric Water Level Control

EVAPCO cooling towers are available with an optional electric water level control system in place of the standard mechanical makeup valve and float assembly. This package provides very accurate control for the basin water level and does not require field adjustment, even under varying operating conditions.

The control was designed by EVAPCO and is manufactured exclusively for EVAPCO. It consists of multiple heavy duty stainless steel electrodes. These electrodes are mounted external to the unit in a vertical stand pipe. For winter operation, the stand pipe must be wrapped with electric heating cable and insulated to protect it from freezing.

The weather protected slow closing solenoid valve(s) for the makeup water connection is factory supplied and is ready for piping to a water supply with a pressure between 140 and 340 kPa.



#### Stainless Steel Water Touch Basin

The AT Cooling Tower has a modular design which allows specific areas to be enhanced for increased corrosion protection. The basin area of the cooling tower experiences turbulent mixing of air and water, in addition to silt build-up. In conjunction with the EVAPCOAT Corrosion Protection System, EVAPCO offers an optional Stainless Steel Water Touch Basin. This option provides Type 304 or Type 316 stainless steel for the entire basin area including the support columns of the cooling tower and the louver frames.

The basin section provides the structural support for the unit and is the most important part of the cooling tower. The Stainless Steel Water Touch Basin provides maximum corrosion protection.



Flanged Connections



Bypass Connections with Diffuser Hood



Equalizers and Flume Plates

#### Other Options

- Heater Control Packages
- Hot Water or Steam Coils
- Steam Injectors
- Bottom Suction Connections
- Vibration Isolators (single cell only)
- Vibration Switches
- Remote Sump Connections

### Technical Support Services

#### EVAPSPEC

EVAPSPEC is a Windows based computer selection program which allows the design engineer to choose EVAPCO models and optimize unit selections. The program allows the engineer to evaluate the equipment's thermal performance, sound levels, space and energy requirements. Once the model is selected and optional equipment features are inserted, the engineer may output a complete specification **AND** a unit drawing from this program. The software is designed to provide the user with maximum flexibility in analyzing the various selection parameters while in a friendly and familiar Windows format.

The EVAPSPEC software is available to all consulting engineering offices and design-build contractors. The programs are distributed through the local EVAPCO sales representative or the EVAPCO corporate office in Taneytown, MD.

#### EVAPWEB

Log on to EVAPCO's new and improved "EVAPWEB" website (<http://www.evapcoeuropa.com>) for expanded product information. Users can view and download unit certified and steel support drawings in a .pdf format readable using Adobe Acrobat. In addition, scaled isometric views of our equipment in CAD (.dwg format) are also available. Product Literature, Rigging and Maintenance Instructions and EVAPCO logo apparel and merchandise are all accessible online from your computer.

The EVAPSPEC Equipment Selection Software program may be accessed for download to your local hard drive, after contacting your local EVAPCO sales representative. Users may make Requests for Quotation through the website or by e-mailing EVAPCO at this address: [evapco.europe@evapco.be](mailto:evapco.europe@evapco.be).

**With EVAPSPEC and EVAPWEB, equipment selections, written specifications, unit drawing files and EVAPCO on-line information are readily available from the comfort of your own office!**



## Solutions for Sound Sensitive Applications

The NEW AT Cooling Tower is now available with four (4) equipment options to reduce the overall sound generated from the side or top of the AT Cooling Tower. Each option provides various levels of sound reduction and can be used in combination to provide the lowest sound level. Consult EVAPCO's EVAPSPEC or ES II selection program for unit sound levels. If a detailed analysis or full octave band data sheet is required for your application, please consult your EVAPCO Sales Representative.

**NOTE: These low sound options may impact the overall installed dimensions of the AT Cooling Tower selected.**



### Super Low Sound Fan 9–15 dB(A) Reduction versus Standard Fan!

The Super Low Sound Fan offered by EVAPCO utilizes an extremely wide chord blade design available for sound sensitive applications where the lowest sound levels are desired. The fan is one-piece molded heavy duty FRP construction utilizing a forward swept blade design. The Super Low Sound fan is capable of reducing the unit sound pressure levels **9 dB(A) to 15 dB(A)**, depending on specific unit selection and measurement location. The fans are high efficiency axial propeller type and operate with no loss of thermal performance.

*The Super Low Sound Fan is available on all 2.4m wide AT Cooling Towers, ATW Closed Circuit Coolers and ATC Evaporative Condensers.*



### Low Sound Fan 4–7 dB(A) Reduction!

The Low Sound Fan offered by EVAPCO is a wide chord blade design available for sound sensitive applications where low sound levels are desired. It is aluminum blade construction with a steel fan hub. The Low Sound Fan is capable of reducing the unit sound pressure levels **4 dB(A) to 7dB(A)**, depending on specific unit selection and measurement location. The fans are high efficiency axial propeller type and operate with no loss of thermal performance.

*The Low Sound Fan is available on 3,6 m wide AT Cooling Towers, ATW Closed Circuit Coolers and ATC Evaporative Condensers.*



### AT Fan Discharge Sound Attenuation Up to 10 dB(A) Reduction!

The AT Fan Discharge Attenuator offered by EVAPCO is an additional option available to further reduce the sound level of the unit. The attenuator can be used with the standard AT fan or in combination with the Low Sound Fan option.

The discharge attenuator is a factory assembled straight sided discharge hood designed to reduce overall discharge sound levels at full fan speed **5 dB(A) to 10 dB(A)**, depending on specific unit selection and measurement location. It is constructed of Z-725 galvanized steel as standard (options available for Type 304 stainless steel) and includes insulated walls and a low pressure drop baffling system that is acoustically lined with high density fiberglass. The discharge attenuator is self supported by the unit and is shipped loose to be mounted in the field. The discharge attenuator is covered by a heavy gauge hot dip galvanized steel fan guard to prevent debris from entering the attenuator.

The discharge attenuator will have a minimal impact on unit thermal performance (0%-2% derate depending on specific unit selection).

*The AT Discharge Attenuator is available on: ALL standard AT Cooling Towers, ATW Closed Circuit Coolers and ATC Evaporative Condensers. It is also available on 3.6m AT, ATW and ATC Models with the Low Sound Fan option.*

*(Note: The AT Fan Discharge Attenuator Option is NOT available on AT Models provided with the Super Low Sound Fan.)*



### AT Water Silencer Up to 7 dB(A) Reduction!

The water silencer option is available for all AT models and is located in the falling water area of the cold water basin. The water silencer will reduce the high frequency noise associated with the falling water and is capable of reducing overall sound levels **4 dB(A) to 7 dB(A)** measured at 1,5 m from the side or end of the unit. The water silencers reduce overall sound levels **9 dB(A) to 12 dB(A)** (depending on water loading and louver height) measured 1,5 m from the side or end of the unit when water is circulated with fans off.

The water silencers are constructed of lightweight PVC sections and can be easily removed for access to the basin area. *The water silencer will have no impact on unit thermal performance.*

Consult EVAPCO's **Advanced Technology Low Sound Solutions** Bulletin No. 650-EU for detailed product and specification information.



## MECHANICAL SPECIFICATIONS

Furnish and install as shown on the plans an EVAPCO Model \_\_\_\_\_ induced draft counterflow cooling tower. Each unit shall have the capacity to cool \_\_\_\_\_ l/s of water from \_\_\_\_\_ °C to \_\_\_\_\_ °C with a \_\_\_\_\_ °C entering wet bulb temperature.

### Pan

The pan shall be constructed of Z-725 hot-dip galvanized steel for long life and durability. Z-725 hot-dip galvanized steel designates an average coating thickness of 725 g of zinc per sq.m. of surface area. Standard pan accessories shall include overflow, drain, anti-vortexing hood, Type 304 Stainless Steel strainers, and brass make-up valve with plastic float. The entire pan area shall incorporate a stepped configuration for reduced water volume, lower operating weight and easier pan maintenance. The upper and lower pan bottoms shall be sloped to provide positive drainage of the complete basin section. Depressed side outlet sumps which are not an integral part of the basin shall not be acceptable.

### Casing

The casing shall be constructed of Z-725 hot-dip galvanized steel and shall totally encase the sides of the fill section to protect the surface from direct atmosphere contact. *Casing materials shall be of non-flammable construction.*

### Models AT 19-56 to AT 38-942

#### Fan Motor(s)

\_\_\_\_\_ kW totally enclosed fan cooled (T.E.F.C.) ball bearing fan motor(s) shall be furnished suitable for cooling tower service on \_\_\_\_\_ volts, \_\_\_\_\_ hertz, and \_\_\_\_\_ phase. Motor(s) shall be mounted on an adjustable base which is mounted on the side of the unit for service. A hinged protective cover shall shield the motor and sheave from the weather.

#### Drive

The fan drive shall be a multigroove, solid back V-belt type with taper lock sheaves designed for 1.5 service factor of the motor nameplate kW. The belt material shall be neoprene reinforced with polyester cord and specifically designed for cooling tower service. A hinged protective cover shall shield the motor and sheave from the weather. Belt adjustment shall be accomplished from the exterior of the unit. Bearing lube lines shall be extended to the exterior of the unit for easy maintenance. *All sheaves located in the airstream shall be constructed of aluminum alloy, vented guards shall not be acceptable. If internal belt adjustment is necessary, an internal working platform and ladder is required to access the drive system.*

### Models AT 112-012 to AT 424-936

#### Fan Motor(s)

\_\_\_\_\_ kW totally enclosed air over (T.E.A.O.) ball bearing fan motor(s) shall be furnished suitable for cooling tower service on \_\_\_\_\_ volts, \_\_\_\_\_ hertz, and \_\_\_\_\_ phase. Motor(s) shall be mounted on an adjustable base which allows the motor to swing to the outside of the unit for servicing.

#### Drive

The fan drive shall be a multigroove, solid back V-belt type with taper lock sheaves designed for 1.5 service factor of the motor nameplate kW. The belt material shall be neoprene reinforced with polyester cord and specifically designed for cooling tower service. Fan and motor sheaves shall be aluminum alloy construction. Belt adjustment shall be accomplished from the exterior of the unit. Bearing lube lines shall be extended to the exterior of the unit for easy maintenance. *All sheaves located in the airstream shall be constructed of aluminum alloy, vented guards shall not be acceptable. If internal belt adjustment is necessary, an internal working platform and ladder is required to access the drive system.*

### Axial Propeller Fans

Fans shall be heavy duty axial propeller type statically balanced. The fans shall be fabricated by the cooling tower manufacturer for single source responsibility and reliability. The fans shall be constructed of extruded aluminum alloy blades, installed in a closely fitted cowl with venturi air inlet for maximum fan efficiency. Each fan blade shall be individually adjustable. Fan cowl shall be covered with a heavy gauge hot dip galvanized wire fan guard.

### Fan Shaft Bearings

Fan shaft bearings shall be heavy duty self-aligning ball type with self locking collars and grease fittings extended to the outside of the unit. Bearings shall be designed for a minimum L-10 life of 75,000 hours.

### Fill

The cooling tower fill shall be PVC (Polyvinyl Chloride) of cross-fluted design for optimum heat transfer efficiency. The cross-fluted sheets shall be bonded together for strength and durability. The PVC fill shall be self-extinguishing for fire resistance with a flame spread rating of 5 per ASTM E84-81a. It shall also be resistant to rot, decay and biological attack. The fill shall be able to withstand a water temperature of 55°C.

### Non-Corrosive Water Distribution System

Each cell of the cooling tower shall have one (1) hot water return inlet connected to a main spray header. The spray header and branches shall be constructed of Schedule 40 polyvinyl chloride (PVC) pipe for corrosion resistance and shall have a steel connection which is beveled for weld/grooved for a mechanical coupling to attach the external piping. The spray header and branches shall be removable for cleaning purposes and have threaded end caps to allow debris to be removed. The water shall be distributed over the fill by precision molded ABS spray nozzles with large 10mm by 25mm orifice openings and integral sludge ring to eliminate clogging. The nozzles shall be threaded into the water distribution piping to assure positive positioning.

### Eliminators

The eliminators shall be constructed entirely of inert polyvinyl chloride (PVC) in easily handled sections and be completely separate from the fill section for maximum efficiency. The eliminator design shall incorporate three changes in air direction to assure removal of all entrained moisture from the discharge air stream. Maximum drift rate shall be less than .001% of the circulating water rate.

### Air Inlet Louver Screens

The louvers screens shall be constructed of polyvinyl chloride (PVC) and mounted in easily removable frames on all four sides of the cooling tower for access to the entire basin area for maintenance. The louvers shall have a minimum of two changes in air direction to prevent splashout, block direct sunlight from entering the basin, and have a 19mm opening to prevent debris from entering the basin.

### Finish

All pan and casing material shall be constructed of Z-725 heavy gauge mill hot-dip galvanized steel for maximum protection against corrosion. During fabrication, all panel edges shall be coated with a 95% pure zinc-rich compound.



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