Vertex™ Evaporative Condenser

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Introducing the Vertex™ Evaporative Condenser, where peak reliability meets easy maintenance. This new benchmark combines what you like most about legacy BAC evaporative condensers with new innovations for the fut**ure**.

TriArmor® Corrosion Protection System

EVERTOUGH™ CONSTRUCTION

BAC's Vertex™ Evaporative Condenser:

Where Peak Reliability Meets Easy Maintenance

213 to 1,433 Tons in a Single Unit

- Maximum Uptime and Reliability
- Easy and Safe Accessibility
- Lowest Installation Costs
- Lowest Maintenance Costs
- Superior Efficiency

Made in USA

IBC Compliant

iar® International Institute of Ammonia Refrigeration

RETA

Vertex™ Evaporative Condenser Benefits

The Vertex Condenser offers maximum uptime and offers the easiest and safest accessibility. It also has the lowest total cost of ownership with the lowest installation, maintenance, and operating costs. And of course, the Vertex Condenser uses evaporative cooling, so it's an inherently sustainable solution for your industrial refrigeration and other industrial process applications.

Maximum Uptime & Reliability

Year-Round Operation

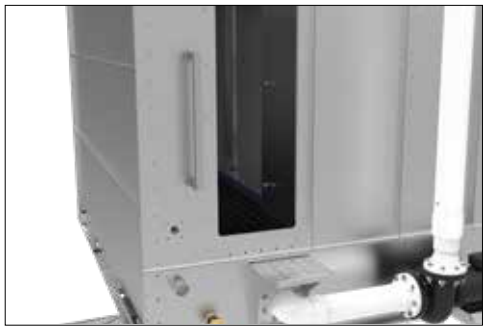
- Maximize reliability and minimize unplanned downtime with the EC Fan System (direct-drive fan system with EC motors and axial fans)
- Enjoy peace of mind and uninterrupted operation with multiple fans, motors, and optional redundant pumps
- Perform through the harshest conditions with a durable and robust industrial design
- Increase reliability, corrosion resistance, and longevity with superior material options that save you time and money

Industrial Design for Harshest Conditions

Easy & Safe Accessibility

Alleviate Confined Space Limitations[1]

- The largest access door easily accommodates a 6.5' tall person; a sturdy step and safety handle provides safe entry and exit
- Ground level access to the drive system, pump(s), and terminal box eliminates the need for platforms or ladders to access them
- Stay dry while safely inspecting the basin with an internal walkway
- Reduce maintenance labor costs by 50% and address confined space hazards with a walkable, spacious interior and easy entry and exit[1]
- Industry-leading, most configurable OSHA compliant modular platforms to meet your specific site requirements



Alleviate Confined Space Limitations;Easily Accommodates a 6.5' Tall Person

Lowest Installation Costs

30% Reduction in Installation Costs[2]

- Reduce on-site labor requirements and ensure on-time commissioning with pre-assembled platform options
- Align the upper section to the lower section in less than 15 minutes per cell, due to the industrial-grade rigidity of the unit
- Simplify field installation and save time with single-point wiring
- Save time and money; no VFD or vibration switch is required[3]

Simplify Field Installation with Single Point Wiring

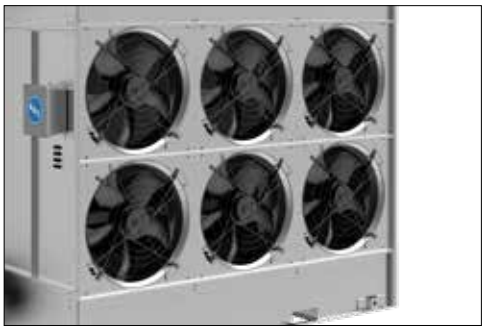
Lowest Maintenance Costs
50% Reduction in Maintenance Costs [2]

- No regular maintenance required for the direct-drive EC Fan System
- Easy inspection of the basin, strainer, and drive components with a sturdy internal walkway
- Easy cleaning and improved hygiene with a compact, sloped water basin
- Save on chemical and water costs with up to 30% lower water volume[2]
- Fast and easy inspection of all nozzles with optional pre-assembled platforms at an ergonomic working height
- Reduce maintenance costs and maximize uptime with BAC's enhanced belt-driven independent fan system (optional); that easily allows access to all drive components

Stay Dry While Safely Inspecting the Basin with the Internal Walkway

Superior Efficiency
10% Lower Energy Usage[2]

- Reduce operating costs with the highly-efficient, direct-drive, variable-speed EC Fan System
- For many replacement jobs, the innovative design can provide a higher capacity or reduced energy usage at the same weight
- Save energy with improved head pressure control in winter months due to the EC Fan System's lower minimum speeds



Superior Efficiency with the EC Fan System

NOTES:

1. Check local codes to verify confined space requirements.
2. Comparisons are based on the Vertex Condenser vs. traditional forced draft axial fan evaporative condensers.
3. For EC Fan System models only.

Vertex™ Evaporative Condenser Innovative Design Features

1 Factory Pre-Assembled Platforms with Perimeter Handrails (OPTIONAL)

Easy-to-install design for contractors and owners looking to reduce the cost of installation and ensure on-time commissioning. Safely inspect the nozzles across the entire unit with platforms at an ergonomic height.

2 BranchLok™ Removal System

No tools required to remove or inspect spray branches and nozzles, reducing maintenance costs. Faster cleaning makes peak energy efficiency easier to sustain.

3 EC Fan System

Simple design for lowest maintenance, easiest access and maximum efficiency, this system includes single-stage axial fans and variable-speed EC motors. There is no transmission to maintain!

4 TriArmor® Corrosion Protection System & EVERTOUGH™ Construction (OPTIONAL)

Superior material options increase reliability, corrosion resistance, and longevity; 5-year leak-free warranty and seamless basins allow for higher cycles of concentration, save water and reduce chemical usage.

5 Basin

The falling water on the high step of the basin causes turbulence and reduces cleaning requirements. The lower water volume reduces chemical and water volume by up to 30%.

6 Internal Walkway

Stay dry while safely inspecting the basin with a sturdy internal walkway.

7 Largest Access Door(s)

The largest access door (68" H x 20" W) is also safe with a sturdy step and safety handle. It's easy for a 6.5' tall person to enter and exit for service. (2nd door optional)

Baltidrive® Power Train (OPTIONAL)

Reduce maintenance costs and maximize uptime with BAC's belt-driven independent fan system. It's the most serviceable, most robust, and most reliable in the industry.

Vertex™ Evaporative Condenser Custom Features & Options

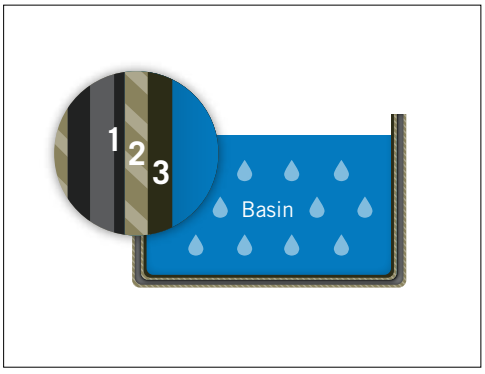
Materials of Construction

Determining the appropriate material of construction for a project depends on several factors, including water quality, climate and environmental conditions, availability of time and manpower for maintenance, unit lifetime requirements, and budget. BAC provides the widest variety of material of construction options in the industry and has the ability to provide a solution to meet all conditions and budgets.

Standard Construction

STANDARD CONSTRUCTION

G-235 mill galvanized steel is the heaviest commercially available galvanized steel, universally recognized for its strength and corrosion resistance. To assure long life, a G-235 mill galvanized steel frame with fiberglass reinforced polyester (FRP) casing panels and louvers is used as the standard material of construction. The structural integrity of the unit is provided by its strong steel frame. With proper maintenance and water treatment, G-235 galvanized steel and FRP will provide an excellent service life under the operating conditions normally encountered in most applications.



TriArmor® Corrosion Protection System Triple Layer Protection of the Basin

Customer Valued

TRIARMOR® CORROSION PROTECTION SYSTEM (OPTION)

The TriArmor® Corrosion Protection System consists of heavy gauge G-235 mill galvanized steel panels fully encapsulated by a thermosetting hybrid polymer and further protected by a polyurethane barrier applied to all submerged surfaces of the cold water basin. The triple layers of protection form a completely seamless cold water basin for the most leak resistant and durable basin in the industry. Other components within the basin, such as the strainer and submerged structural supports, will be constructed of stainless steel. The TriArmor® Corrosion Protection System was specifically designed for evaporative cooling applications and released in 2006 after a decade of extensive R&D and field testing. To date, there are thousands of successful installations in North America. Every basin is leak tested at the factory and warranted against leaks and corrosion for 5 years.

Factory Application of TriArmor® Corrosion Protection System

Customer Valued

EVERTOUGH™ CONSTRUCTION (OPTION)

EVERTOUGH™ Construction combines the most corrosion-resistant materials to provide the best value in corrosion protection for most water chemistries. EVERTOUGH™ Construction is backed by a comprehensive 5-year warranty which covers ALL components from the fan to the cold water basin, from louver to louver, including the motor (excluding the coil).

Specifically, the following materials are used in EVERTOUGH™ Construction:

- The basin is constructed with the TriArmor® Corrosion Protection System. The basin is leak tested at the factory and warranted against leaks and corrosion for 5 years.
- Designated steel components above the basin are constructed of heavy-gauge G-235 mill galvanized steel and further protected with a thermosetting hybrid polymer.
- The distribution system is non-corrosive Schedule 40 PVC.
- Other components within the basin, such as the strainer and submerged structural supports, will be constructed of stainless steel.

EVERTOUGH™ Construction

THERMOSETTING HYBRID POLYMER (OPTION)

A thermosetting hybrid polymer, used to extend equipment life, is applied to select G-235 mill galvanized steel components of the unit. The polymerized coating is baked onto the G-235 mill galvanized steel and creates a barrier to the already corrosion resistant galvanized steel. The thermosetting hybrid polymer has been tested to withstand 6,000 hours in a 5% salt spray without blistering, chipping, or losing adhesion.

STAINLESS STEEL (OPTION)

Several stainless steel material of construction options are available

- **WELDED STAINLESS STEEL BASIN**
  All steel panels and structural members of the basin are constructed from stainless steel. Seams between panels inside the basin are welded, providing an advantage over bolted stainless steel basins for minimizing susceptibility to leaks at basin seams. The basin is leak tested at the factory and welded seams are provided with a 5-year, leak-proof warranty.

- **ALL STAINLESS STEEL CONSTRUCTION (OPTION)**
  Steel panels and structural elements are constructed of stainless steel. Seams between panels inside the basin are welded. The basin is leak tested at the factory and welded seams are provided with a 5-year leak-proof warranty.

Welded Stainless Steel Basin

Vertex™ Evaporative Condenser Custom Features & Options

Coil Configurations

BAC offers a large selection of coil configuration options to fulfill any thermal and pressure drop requirements.

STANDARD SERPENTINE COIL

The standard cooling coil is constructed of continuous lengths of all prime surface steel. The coil is hot-dip galvanized after fabrication (HDGAF) to apply a thick, zinc corrosion barrier over the entire exterior surface of the coil. The coil is designed for low pressure drop with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa) and is fabricated per ASME B31.5 standards to ensure the highest quality and integrity.

Standard Serpentine Coil

STAINLESS STEEL COIL (OPTION)

Coils are available in stainless steel for specialized applications The coil is designed for low pressure drop with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa) and is fabricated per ASME B31.5 standards to ensure the highest quality and integrity.

ASME U DESIGNATOR COIL (OPTION)

BAC offers coils that are certified in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division I. ASME U designated coils are available for projects requiring ASME certified pressure vessels and involve 3rd party inspection and certification. Standard ASME U designated coils are rated at 340 psig (2,344 kPa) maximum allowable working pressure, and they are pneumatically tested at 375 psig (2,586 kPa).

NOTE: A Canadian Registration number (CRN) is required for all pressure vessels over 15 psig entering Canada. The CRN identifies that he design of a boiler, or fitting has been accepted and registered for use in Canada. CRN is available for all standard coil configurations shipping into Canada.

EXTENDED SURFACE COIL (OPTION)

Coils are available with up to all rows finned at 5 fins per inch for seasonal wet/dry operation. The fins increase the surface area of the coil, therefore increasing the condensing capability. The coil is hot-dip galvanized after fabrication (HDGAF) to apply a thick, zinc corrosion barrier over the entire exterior surface of the coil and fins. BAC coils are designed for low pressure drops and to be completely drainable with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa) and is fabricated per ASME B31.5 standards to ensure the highest quality and integrity.

Extended Surface Coil

MULTIPLE CIRCUIT COILS/AUXILIARY COOLING CIRCUIT (OPTION)

Split coil configurations are available to allow separate process fluid or refrigerant loops through the same unit. Separate loops may be needed for multiple applications requiring different temperature processes or multiple types of process fluids or refrigerants. Multiple refrigerant circuit coils are generally required on halocarbon refrigerant systems, where it is common practice to maintain individual compressor systems. The quantity of circuits, capacity per circuit, and desired connection size and type should be specified when requesting this option.

Multiple Circuit Coil

SUBCOOLING COILS (OPTION)

Subcooling coils are available for those halocarbon refrigerant installations where subcooled refrigerant is specified, or where the pressure drop or a vertical rise in the liquid line is great enough to cause excessive flashing. Standard subcooling coil sections provide approximately 10°F (5.6°C) of subcooling at standard conditions. Subcooling sections are approximately 7" high and are mounted between the coil and basin sections. Coils are hot-dip galvanized after fabrication and have a maximum allowable working pressure of 300 psig (2,068 kPa).

COPPER SWEAT FITTINGS (OPTION)

Factory installed copper sweat fittings are available to simplify field piping.

Copper Sweat Fitting

Vertex™ Evaporative Condenser Custom Features & Options

Drive System Options

The fan drive system provides the cooling air necessary to reject unwanted heat from the system to the atmosphere. The Vertex™ Evaporative Condenser is available with two drive system options: the EC Fan System or the BALTIDRIVE® Power Train.

EC Fan System

Customer Valued

EC FAN SYSTEM (STANDARD ON VRC-X-X-XB MODELS)

The EC Fan System is a direct-drive system with single-stage electronically commutated (EC) motors and axial fans. It's simple design for lowest maintenance, allows for easiest access, maximum efficiency, and offers the highest reliability. Here, there is no transmission to maintain!

BALTIDRIVE® POWER TRAIN (STANDARD ON VRC-X-X-XA MODELS)

Reduce maintenance costs with BAC's redundant independent motor belt-drive system. It's the most serviceable, most robust, and most reliable in the industry. The fans, motors, and drive system on the Vertex Condenser are located outside the discharge air stream of the unit, protecting them from moisture, condensation, and icing while facilitating maintenance. The motor base has been redesigned to allow for alignment in multiple directions and has been raised for improved access to the adjustment bolts. The design enhances repeatability, serviceability, and reliability, all leading to higher quality. The fan drive system consists of specially designed powerbands, taper lock sheaves, minimum L_{10} bearing life of 94,000 hours and dedicated premium efficient cooling tower duty motor to provide maximum performance and reliability. The BALTIDRIVE® Power Train requires only periodic inspection of components and belt tensioning, which is simple with a single nut adjustment, and requires less downtime. Extended lubrication lines are standard for lubrication of the fan shaft bearings. This system is covered by a comprehensive 5-year motor and drive warranty.

BALTIDRIVE® Power Train - Upgraded Motor Base

DUAL DRIVE (OPTION FOR VRC-X-X-XA MODELS)

The dual drive option for the BALTIDRIVE® Power Train consists of a single motor and drive system attached to two fans. This option is available to reduce the wiring and starter changes on replacement projects.

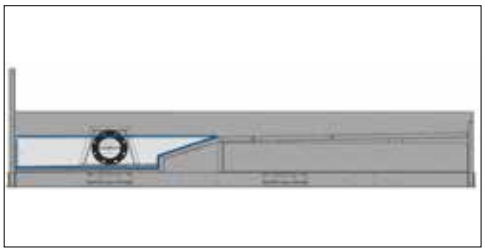
VIBRATION CUTOUT SWITCH (OPTION)

A factory mounted vibration cutout switch is available to effectively protect against rotating equipment failure. BAC can provide either a mechanical or solid-state electronic vibration cutout switch in a NEMA 4 enclosure to ensure reliable protection. Additional contacts can be provided on either switch type to activate an alarm. Remote reset capability is also available on either switch type.

Vibration Cutout Switch

Basin

The spray water collects in the basin which is pumped back over the condensing coil. The hygienic basin is sloped toward the pump suction. During operation, this design eliminates any stagnant water zones, which are susceptible to biological growth. Save on chemical and water costs with up to 30% lower water volume.



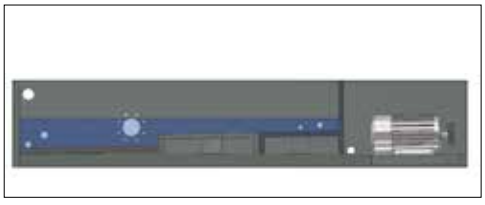
Vertex Evaporative Condenser Basin
30% Lower Water Volume

STANDARD MECHANICAL WATER LEVEL CONTROL

Mechanical make-up valves must operate continuously in the moist and turbulent environment existing within evaporative cooling equipment. Due to this environment, the operation of the valve must be simple, and the valve must be durable. BAC's high quality mechanical water level control assembly is standard with all units, and has been specially designed to provide the most reliable operation while being easy to maintain. This accessory is omitted for remote sump applications.

ELECTRIC WATER LEVEL CONTROL (OPTION)

BAC's Electric Water Level Control (EWLC) is a state-of-the art, conductivity actuated, probe type liquid level control. The hermetically sealed EWLC is engineered and manufactured specifically for use in evaporative cooling systems and is equipped with an error code LED to indicate status, including when the water and/or probes are dirty. The EWLC option replaces the standard mechanical make-up valve, and includes a slow closing, solenoid activated valve in the make-up water line to minimize water hammer. EWLC is recommended when more precise water level control is required and in areas that experience sub-freezing conditions.



Traditional Forced Draft Evaporative Condenser Basin

BASIN SWEEPER PIPING (OPTION)

Basin sweeper piping is an effective method of reducing sediment that may collect in the basin of the unit. A complete piping system, including nozzles, is provided in the basin to connect to side stream filtration equipment (provided by others). For more information on filtration systems, consult "Filtration Guide" available on www.baltimoreaircoil.com.

Vertex™ Evaporative Condenser Custom Features & Options

BASIN HEATERS (OPTION)

Evaporative cooling equipment exposed to below freezing ambient temperatures require protection to prevent freezing of the water in the basin when the unit is idle. Factory-installed electric immersion heaters, which maintain 40°F (4.4°C) water temperature, are a simple and inexpensive way of providing such protection.

NOTE:
This table is based on 460V/3 phase/60 Hz power.

HEATER kW DATA

Model Number	0°F (-17.8°C) Ambient Heaters				-20°F (-28.9°C) Ambient Heaters			
	Baltidrive Models		EC Direct Drive Models		Baltidrive Models		EC Direct Drive Models	
	Number of Heaters	kW per Heater	Number of Heaters	kW per Heater	Number of Heaters	kW per Heater	Number of Heaters	kW per Heater
VRC-x-1012-x	1	7	1	10	1	9	1	14
VRC-x-1018-x	1	10	2	7	1	14	2	10
VRC-x-1212-x	1	8	1	12	1	12	1	15
VRC-x-1218-x	1	12	2	9	1	18	2	12
VRC-x-1024-x	2	7	2	10	2	9	2	14
VRC-x-1036-x	2	10	4	7	2	14	4	10
VRC-x-1224-x	2	8	2	12	2	12	2	15
VRC-x-1236-x	2	12	4	9	2	18	4	12

LOW AND HIGH LEVEL ALARMS (OPTION)

Low and high level alarm float switches are available to provide added control to your equipment operation. Level alarms can alert operators to an abnormal operating condition to ensure the highest system efficiency with minimal water usage.

Water Distribution System

BRANCHLOCK REMOVAL SYSTEM

The BranchLok™ Removal System is a water distribution branch removal system that requires no tools, allowing for easy inspection and maintenance of the water distribution. Maintainability ensures continued even flow over the heat transfer surface for maximum capacity.

BranchLok™ Removal System

STANDARD SPRAY WATER PUMP

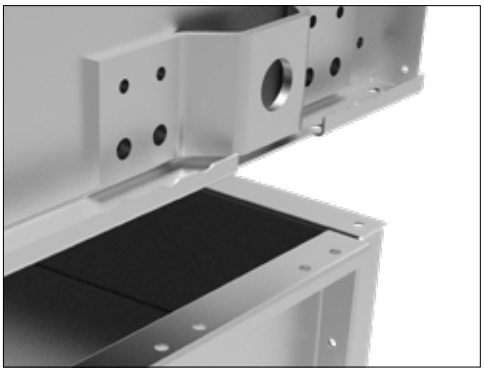
The Vertex Condenser water distribution system comes standard with an integral spray water pump sized to distribute the recirculating water over the coil, maximizing capacity. The patented BAC 360 Spray Nozzles are non-clog, ensure even flow over the coil area, and are simple to remove for maintenance.

REDUNDANT PUMPS (OPTION)

An optional secondary spray pump is available. This pump can be switched easily and maintained while the unit remains in operation.

Shipping and Rigging

BAC units are factory-assembled to ensure uniform quality with minimum field assembly. Each unit has been designed with rigging and assembly in mind and includes features to minimize the number of tools required and installation time. Align the upper section to the lower section in less than 15 minutes per cell. You can also simplify field installation with single-point wiring standard on the EC Fan System, optional for the Baltidrive® Power Train.



Single Point Wiring

Air Intake Options

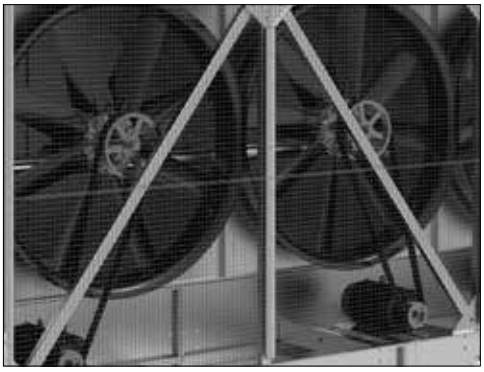
In an evaporative condenser, airborne debris can be trapped in the water through the unit's air intake. The Vertex Evaporative Condenser has several options for air intake accessories that prevent debris from entering the system and maintain even unobstructed flow through the unit. Reducing the amount of debris that enters the unit lowers maintenance requirements and helps to maintain thermal efficiency.

AIR INTAKE SCREENS (STANDARD ON VRC-X-X-XA MODELS)

Standard 1 1/4" x 1 1/4" wire mesh screen is factory-installed over the air intake to prevent debris from entering the unit

SOLID BOTTOM PANELS (OPTION ON VRC-X-X-XA MODELS)

Factory-installed bottom panels are required when intake air is ducted to the unit.



Air Intake Screen

Vertex™ Evaporative Condenser Custom Features & Options

Access Options

BAC's evaporative equipment is designed to be easily maintained for sustaining capacity over a longer life. All access options are meet OSHA requirements to ensure personnel safety and code compliance.

Customer Valued

STANDARD INTERNAL WALKWAY

All Vertex Condensers are supplied with a sturdy internal walkway above the water line. The walkway provides outstanding access to inspect the cold water basin, drive components, and the underside of the condensing coil, all while keeping your feet dry.

Customer Valued

LARGEST ACCESS DOOR (2ND DOOR AVAILABLE AS AN OPTION)

The largest access door (68" H x 20" W) is also safe with a sturdy step and safety handle. It's easy for a 6.5' tall person to enter and exit for service.

Alleviate Confined Space Constraints; Oversized Access Door

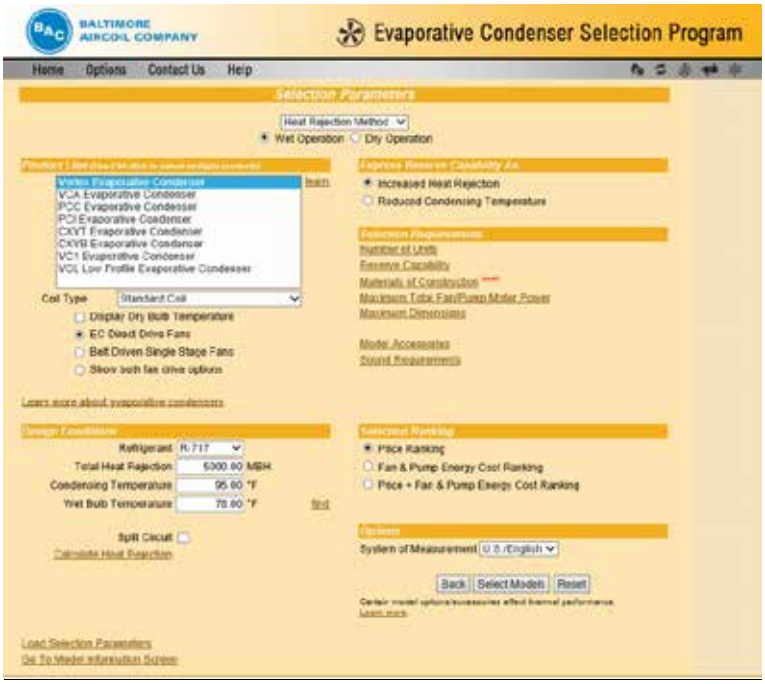
FACTORY PRE-ASSEMBLED PLATFORMS WITH PERIMETER HANDRAILS – INDUSTRY LEADING FLEXIBILITY (OPTION)

Easy-to-install design for contractors and owners looking to reduce the cost of installation and ensure on-time commissioning. Safely inspect the nozzles across the entire unit with platforms at an ergonomic height. Every external platform module is pre-assembled at the factory to ensure that every component will fit and function exactly as described. The platform will attach quickly in the field with minimal fasteners. Platforms, ladders, and safety cages can be added at the time of order or as an aftermarket item. All components are designed to meet OSHA requirements.

Pre-Assembled External Platform

Selection Software

BAC's Vertex Evaporative Condenser has the best selection software in the industry.



SELECTION

Making selections for your specific application is easier than ever with BAC's selection software. You can compare various condensers to see which one is the perfect fit.

INFORMATION PACKET

Since the Vertex Evaporative Condenser has premium features, BAC can provide a customized report for your specific project to show the value of the Vertex versus other evaporative condensers.

The selection output will include technical details, explanations of features, a value table, and more.