

STAINLESS STEEL EVAPORATIVE CONDENSERS

Frick® | ECOSS™

Built to withstand the tests of time.



Frick®
INDUSTRIAL REFRIGERATION

ECOSS™

STAINLESS STEEL EVAPORATIVE CONDENSERS | BUILT TO STAND THE TESTS OF TIME.



The ECROSS Stainless Steel Evaporative Condenser from Frick delivers a lifetime of cost savings:

- Easier installation with less weight than galvanized steel
- Easy access to components for reduced maintenance hours and costs
- Exceptional resistance to white rust and corrosive elements
- Highly efficient direct-drive fan options lower energy consumption, increased reliability
- Effective life span double that of conventional evaporative condensers
- Significantly reduced annual operating costs
- Up to 70% savings in total life-cycle costs

If you're looking to build a new facility, particularly in a remote location, you need to consider water usage restrictions, source-water quality, discharge permits and which chemicals are allowed at the prospective site prior to making any decision. Why? Because all of those factors can have a significant impact on the installation costs, effectiveness, maintenance requirements and life span of the evaporative cooling system that keeps your building and your workers operating at peak efficiency.

The ECROSS stainless steel design has been proven in the most remote locations, where water quality is often an issue and the availability of water treatment facilities is limited.



Genuine Value Lasts.

Frick ECOSS Evaporative Condensers

A Longer-Lasting Solution To Your Cooling Needs

For decades, galvanized coatings have been the standard for evaporative condensers and coolers. But today, increasingly stringent environmental discharge concerns have led to the reduction or elimination of effective chemicals in both the galvanizing process and in water treatment programs.

The incidence of corrosive damage to galvanized steel condensers has increased dramatically in recent decades. Chromates have been all but eliminated, and zinc treatments are restricted in many locations today. White rust damage to evaporative condensers, and more specifically, galvanized steel condenser coils is almost five times more damaging than it was 15 years ago.

Galvanized steel surfaces must be passivated at start-up and routine maintenance intervals, requiring valuable man-hours and associated chemical costs. Improper or no passivation at start-up can destroy a galvanized steel condenser within a year.

Proven In The Worst Environments

If you're looking for cooling technology that will stand the test of time and work in remote locations with degraded water quality, it's time to discover the advantages of Frick ECOSS stainless steel evaporative condensers.

All galvanizing issues are eliminated, and water treatment costs are significantly reduced. Scale buildup on the smooth-walled stainless steel tubes is minimized due to 304L stainless steel's low propensity to scale. Plus, stainless steel coils and surfaces are self-passivating, so there's significantly less downtime.

ECOSS has met the challenges of poor water quality, passivation, scale and corrosion head-on with a success rate of 100%, even in installations where there are often no water treatment or blowdown services available.

A More Sustainable Solution

HydroBLU® control technology addresses the economic and environmental impacts of diminishing and degraded water resources. This eco-friendly design minimizes water treatment requirements and allows for operation at higher cycles of concentration with reduced blowdown and lower makeup water requirements. The stainless steel coil and casing nullify any zinc or lead in the blow down, resulting in no white or red rust and vastly reduced chemical usage.



ECOSS™

STAINLESS STEEL EVAPORATIVE CONDENSERS | BUILT TO STAND THE TESTS OF TIME.

304L Stainless Steel Construction

- Stainless steel coil
- Stainless steel frame and covers
- Fully welded stainless steel basin

Long Product Life

- 20+ year product life
- EC fans designed for evaporative service
- Self-passivating stainless steel provides a minimum product life twice that of galvanized steel
- EC fans with stainless steel shaft and bearings, as well as epoxy-coated body

Capacity Range

- 200 to 625 TR in single unit
- Scalable frame design with dual and quad arrangements
- More than 45 unit variants available
- High power density through optimized water distribution over entire coil surface

Minimal Footprint

- High static stability
- 50% less operating weight
- Reduced expense for substructure to be provided on-site by customer





High-Efficiency Fans

- Excellent energy-efficiency class
- Maintenance-free fans with long service life
- EC motors with built-in variable fan speed control
- Fans with improved sound characteristics
- Multiple fan motors provide increased redundancy

Inlet Louvers

- Watertight
- UV resistant
- Corrosion-resistant
- Prevent sunlight from entering basin – reducing/minimizing plant life growth
- Prevent splashout of water

Warranty

- 5-year leakage guarantee on coils
- 5-year leakage guarantee on fully-welded cold-water basin
- 5-year guarantee on powertrain
- Every unit tested in a facility certified to ASHRAE 64 standard
- Evaporative condenser testing meets CTI standards
- Coils fabricated with ANSI-rated materials
- All coils manufactured and certified to ASME Section VIII, BPV Code

Significantly Reduced Installation Labor



The modular frame design ensures that the coil section and basin remain perfectly intact during transportation and do not require drift pins or sealer tape during assembly. The box sections allow for trouble-free alignment during assembly, which significantly reduces the man-hours and access requirements associated with rigging and assembly. The frame profile and panels fit tightly together with a structural interlocking design to ensure the correct alignment to prevent any water leakage at these seams.



70% Cost Advantage Vs. The Competition.

Our stainless steel tube technology and stainless steel frame design are modular and can be sized up or down to meet your cooling needs. This provides Frick customers with an economic advantage of up to 70% lower cost versus the competition.

	10' x 12'	12' x 12'	10' x 18'	12' x 18'
Power Spectrum in Tons				
Refrigerant	NH3	NH3	NH3	NH3
Range of Condensing Temp.	60F - 110F	60F - 110F	60F - 110F	60F - 110F
Range of Wet Bulb Temp.	50F - 86F	50F - 86F	50F - 86F	50F - 86F
Rows (no.)	6, 8, 10, 12	8, 10, 12	6, 8, 10, 12	8, 10, 12
Tube Diameter	3/4"	3/4"	3/4"	3/4"
Coil Material (tubes, bends, headers, connection)	St/st. 304L	St/st. 304L	St/st. 304L	St/st. 304L
Quality Standard	ISO 9001	ISO 9001	ISO 9001	ISO 9001
Dimensions (in ft)	10' W x 12' L x 14' H	12' W x 12' L x 14' H	10' W x 18' L x 15' H	12' W x 18' L x 15' H
Weight in lbs.	7,000 - 9,000	9,000 - 11,000	11,000 - 14,500	14,000 - 16,500

Optimized Fan Solutions

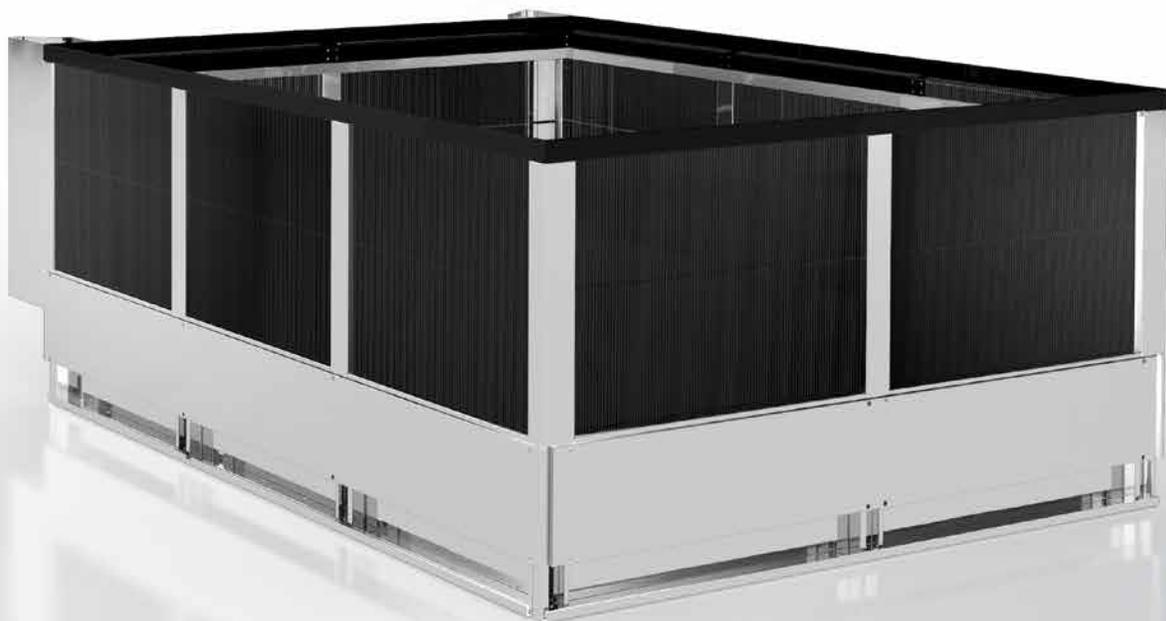
- Factory-wired direct-drive EC fan motors
- No belts to adjust or replace
- No bearings to grease or replace
- Fan motors wired to a common junction box (power and control)

Simplified Rigging

- Quick and easy positioning of coil-fan/basin sections
- High torsional stiffness
- Optimal load distribution
- 50% less rigging weight versus conventional designs
- Smaller crane for assembly required
- No sealer tape, drift pins or screw tappers required

Plug-and-Play Controls

- Parameters of fans are set automatically by motor management
- No software required for parameter setting or addressing the fans
- No shielded cables needed



Lower Operating Costs

The Advantages of Direct Drive

Direct-drive EC motors with a state-of-the-art controller provide superior performance and superior efficiency when compared with premium efficient motors coupled with a VFD. There are none of the headaches associated with VFD installations, location and cabling requirements. Direct-drive fans eliminate any belt tensioning requirements and the regular greasing of pillow block bearings. The smaller diameters of our direct-drive fans also reduce overall sound emissions for employees and neighbors.



Energy Savings

- EC fan technology for lower power consumption
- Soft-start function for EC fans
- Excellent energy-efficiency class for both AC and EC fans



Intelligent Control System

- Standard with EC fans
- Selective fan shutdown
- Easy integration into customer's system
- Record of all energy data
- Messages and warnings are shown on controller display



Water Savings

- 50% less water and associated weight within basin section at any time
- 100% leak test of basin prior to shipment
- Reduced water usage with higher cycles of concentration



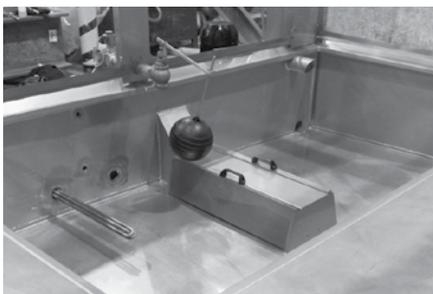
Less Chemical Usage

- Operation at higher cycles of concentration reduces blowdown, water makeup and chemical treatment
- Zero zinc or lead in discharge of blowdown



Lower Maintenance Costs

Easier Access Points



Hinged fan nozzles, a service walkway located within the fan deck compartment, optimized perimeter access and a stepped basin design located on the side of the unit are just some of the features that make the Frick ECOSS evaporative condenser easier and less expensive to service and maintain.

Passivation

- Stainless steel is self-passivating in normal service
- No need for start-up passivation
- No need for ongoing monitoring or periodic passivation

Easy Access

- Hinged fan panels provide access to drift eliminators and spray nozzles
- Walkway beneath allows easy inspection of fan guards
- Vertical alignment of inlet louvers allows easy access to basin

Direct-Drive Fans

- Eliminate all routine maintenance
- No belt adjustments or replacements
- No belt sheaves to align or replace
- No greasing of bearings or replacement of bearings
- No replacement of drive shafts

Reliable Spray Water System

- Removable spray nozzles
- Large orifice nozzles prevent clogging
- Riser pipe from pump positioned to prevent breakage
- Stainless steel strainer
- Fully drainable basin for easier cleaning

EC Motors – Technology of the Future

Use Of EC And AC Fans

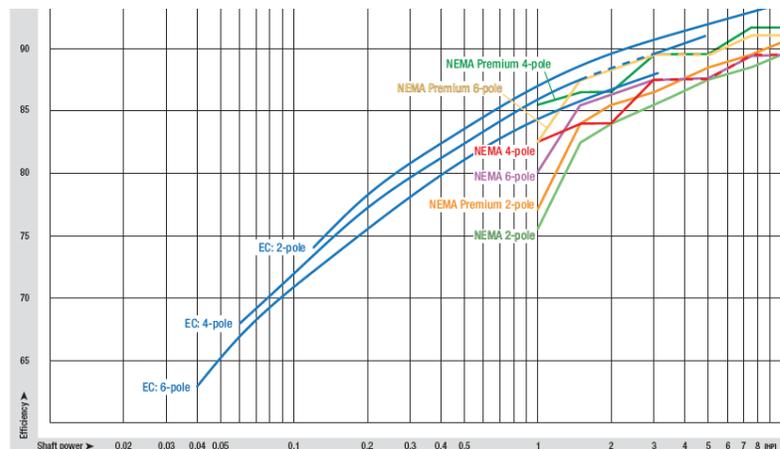


Compared with conventional systems, it is possible to save energy by using EC fans. EC motors are equipped with optimized power electronics, especially developed and designed for these motors. Compared with AC motors, the motors of EC fans have no winding in the rotor, but a permanent magnet instead. Due to that fact, there are no induction losses or slip losses in the rotor. Especially for speed-controlled applications, the EC technology offers a larger variety of benefits, such as low-capacity motor management, automatic parameterization, function and selective fan shutdown.

ECOSS is equipped with high-efficiency, direct-drive axial fans. The motor, impeller, nozzle and protection guard form an entity with optimal ventilation and sound insulation characteristics. All fans are wired at the factory, and are axial fans with EC motor technology standard. The parameters of the EC fans are preset at the factory, so that they are ready for immediate operation upon installation.

EC vs. NEMA Efficiency Comparisons

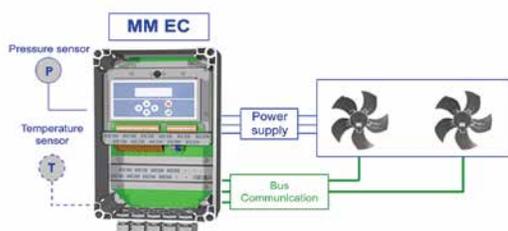
EC motors with integrated electronics compared with NEMA motors without speed controller shaft output power vs. nominal efficiency.



[When a VFD is applied to a NEMA motor, these efficiencies will be considerably reduced] Source: ebm papst

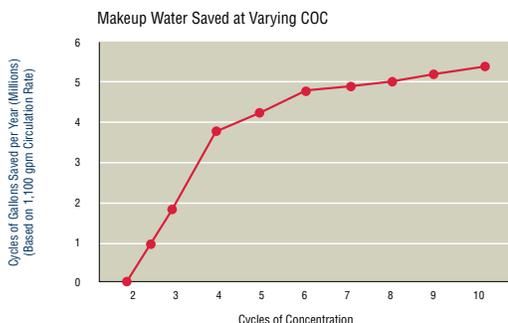
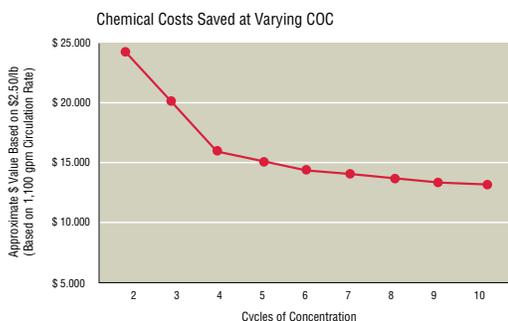


EC Fans + Electronic Control System = Optimized Energy Efficiency



An electronic control system has been developed specifically for use with the EC fans on Frick ECOSS evaporative coolers. The combination of an EC fan with an intelligent control system is critical to minimize energy use while optimizing operation. The labor required for installation of switch cabinets and wiring is reduced considerably. The optional bus interface allows for simpler integration of advanced technologies such as energy management and remote maintenance systems.

	10' x 12'	12' x 12'	10' x 18'	12' x 18'
EC – Fan (no.)	6	6	10	10
EC – Fan Diameter	36"	36"	36"	36"
NEMA Motor (no.) (optional)	4	4	6	6
NEMA Motor Diameter	48"	48"	48"	48"
Protection Class	Cooling Tower Duty	Cooling Tower Duty	Cooling Tower Duty	Cooling Tower Duty



Operation At Higher Cycles Of Concentration

In an attempt to minimize water volumes used in cooling, many facilities employ the softening of makeup water, as it allows the system to run at higher cycles of concentration. The Frick ECOSS evaporative condenser with stainless steel coil, frame, basin and cabinet allows for operation at higher cycles of concentration (COC) compared with galvanized coil and casing construction, which lowers overall water consumption and chemical treatment, with an extreme reduction in scaling and/or corrosion. There is also zinc or lead in the blowdown discharge.

Increasing COC from 3 to 5 can reduce chemical and water cost by as much as 35%, respectively.

Certified Performance And Reliability

To ensure evaporative cooling performance, our heat rejection ratings are based on verified lab test data. Our modern, state-of-the-art environmental test chamber is fully equipped with the latest computerized and automated data acquisition systems and is built according to ASHRAE 64 standard.

Thermal performance ratings for all evaporative condensers and coolers have been tested, validated and proven. This warrants that all products selected will maximize system efficiencies.

Single Source Industrial Refrigeration Solutions !

Heat Exchangers



Packaged Equipment



Hygienic Air Units



Vessels



Controls



Evaporators



Compressors



Condensers



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CONTAINS 25% POST-CONSUMER WASTE

