

Evapco Engineering Flash



Evaporative Closed Circuit Coolers: Know Your Options!

Closed circuit coolers provide efficient heat rejection by means of evaporative cooling. However, unlike an open cooling tower, there is no direct contact between the HVAC or Industrial Process fluid and the ambient air. The closed loop design uses a coil heat exchanger, with the process fluid contained within the coil. A pump circulates water over the outside of the coil bundle, where a small portion is evaporated and the heat is rejected.

The closed loop coil design keeps the process fluid free from any airborne particulates, ensuring a contaminant-free cooling loop. This mitigates the risk of heat exchange surface fouling, which maximizes system efficiency, and minimizes maintenance and operating costs. Also, by “Closing the Loop,” the closed circuit cooler simplifies the hydraulic loop as compared to designing around cooling towers and heat exchangers.

Compared to dry coolers, closed circuit coolers require significantly less space and connected horsepower. In addition, many closed circuit coolers can be operated as a dry cooler during low load or low ambient dry bulb conditions. This dry mode of operation saves water and eliminates ice management in colder climates.

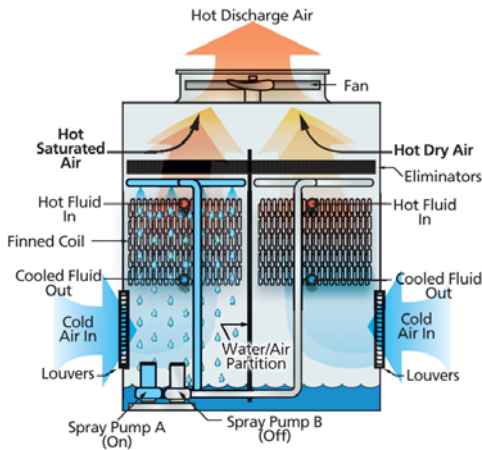
Common closed circuit cooler applications:

- Water Source Heat Pumps
- Computer Room and Data Center Cooling
- High Efficiency, Low Fouling, Chillers and Heat Exchangers
- Critical Chilled Water Applications
- Industrial Process Equipment
- Chiller Plant Economizer Applications
- Evaporative Cooling with Dry Cooling Capability

“Which Closed Circuit Cooler Is Right For My Project?”

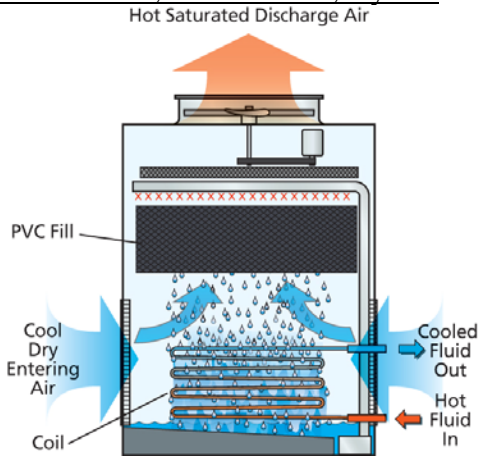
All unit types are available with CTI Certification, ASHRAE 90.1/189.1 Compliance, 2009 IBC Compliance and are offered with Low Sound Options. Below are some items which will help determine the best configuration for your application.

Induced Draft, Counterflow, Finned Coil



- Lowest Annual Energy/Water Consumption
 - Highest Dry Cooling Capability
 - Maintenance Friendly Design
 - Plume Reduction/Abatement Capability
 - Simultaneous Wet/Dry Operation For Increased Water & Energy Efficiency
 - Low Installed Height
 - Corrosion Resistant Material Options (Excluding Coil)
- ✓ *Ideal for year round outdoor installations when maximum dry cooling is desirable. Ideal for satisfying LEED requirements when qualifying water & energy savings.*

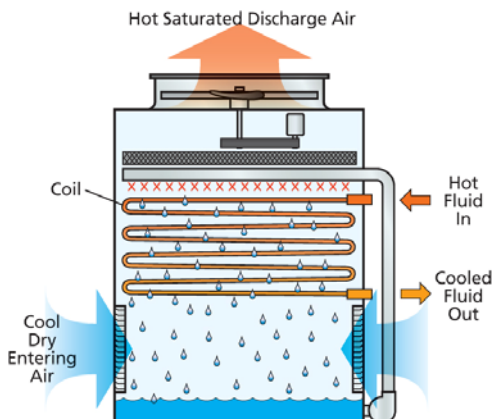
Induced Draft, Counterflow, Hybrid



- Lowest Connected Fan Horse Power
 - Utilizes a Combination of PVC Fill Media and a Closed-Loop Coil
 - Maintenance Friendly Design
 - Corrosion Resistant Material Options (Including Coil)
- ✓ *Ideal for outdoor installations in moderate climates and constant load applications.*

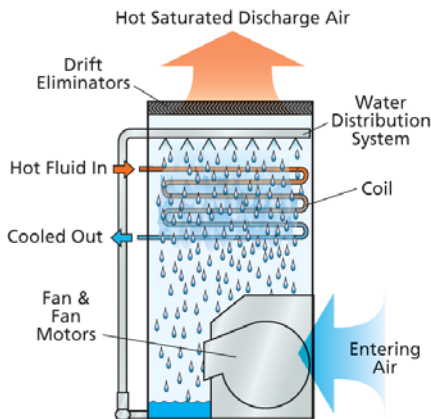
Note: Other hybrid orientations exist with the closed circuit coil located above the PVC fill media. Crossflow PVC fill is applied as well.

Induced Draft, Counterflow, Bare Coil



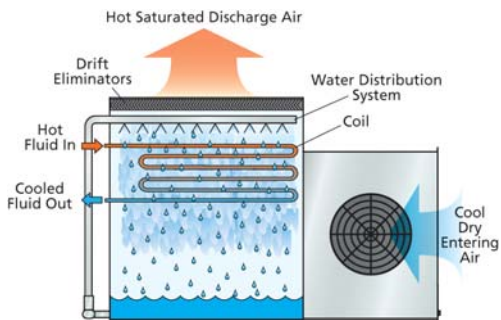
- Dry Cooling Capability
 - OSHPD Pre-Approval Options
 - FM Approved Construction Options
 - Maintenance Friendly Design
 - Low Energy Usage
 - Corrosion Resistant Material Options (Including Coil)
- ✓ *Ideal for year round outdoor installations. Dry operation can be utilized during low loads or months with low ambient dry bulb temperatures.*

Forced Draft, Counterflow, Bare Coil



- Ducted and/or High External Static Pressure Installations
 - Indoor or Outdoor Installations
 - Utilizes Centrifugal Fans
 - Corrosion Resistant Material Options (Including Coil)
 - Dry Cooling Capability
- ✓ *Ideal for large indoor/ducted installations.*

Forced Draft, Counterflow, Low Profile, Bare Coil



- Lowest Installed Height
 - Ducted and/or High External Static Pressure Installations
 - Utilizes Centrifugal Fans
 - Indoor or Outdoor Installations
 - Corrosion Resistant Material Options (Including Coil)
 - Dry Cooling Capability
- ✓ *Ideal for indoor/ducted installations, especially when height is an issue.*

Evaluate if a Closed Circuit Cooler is the right choice for your next evaporative cooling project!

For more information, please contact your local EVAPCO Sales Representative!

Matt Shank

Assistant Product Manager / HVAC

EEF #3
April 2013

