



**Engineered to Improve Water Efficiency**



**Pre-Treatment System for Evaporative Cooling Equipment**

***EASY...SUSTAINABLE...SAFE***



## Get to Know EVAPCO

- A global innovator in heat transfer solutions
- Serving the Commercial HVAC, Industrial Refrigeration, Power Generation, and Industrial Processing markets
- Founded in 1976
- Employee-owned
- 25 manufacturing facilities in 10 countries
- More than 200 sales offices in 51 countries

## Learn More Now.

Visit [evapco.com](http://evapco.com) to download product catalogs, view complete product specifications, product videos and more.

## EVAPCO is more than a name.

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

### We never stop innovating.

At EVAPCO, we don't just talk about innovation, it's 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's why we have more than 28 patents worldwide in the last 10 years alone.

### 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 don't 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.

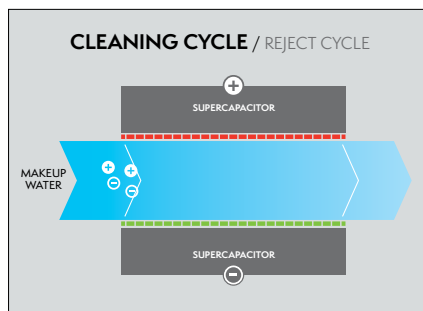
### We protect the environment.

Innovation and environmental sustainability go hand-in-hand at EVAPCO. Our industrial heat transfer equipment not only conserves natural resources and helps reduce noise pollution, but also features recycled steel content in construction. EVAPCO's stainless steel units are constructed of panels that contain up to 75% of recycled content, and our galvanized units contain over 80%. From sound reduction to water conservation to chemical elimination, we are continuously developing new technologies that deliver the ultimate operating advantages to our clients—while protecting the planet for every generation to come.

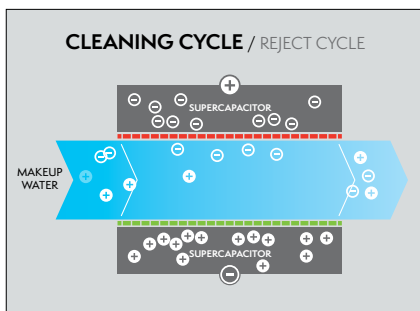




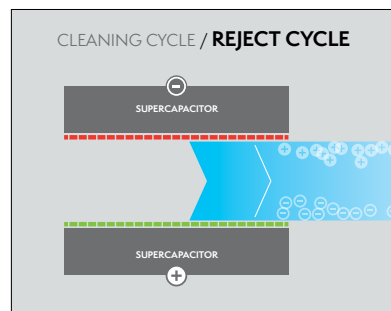
## Principle of Operation



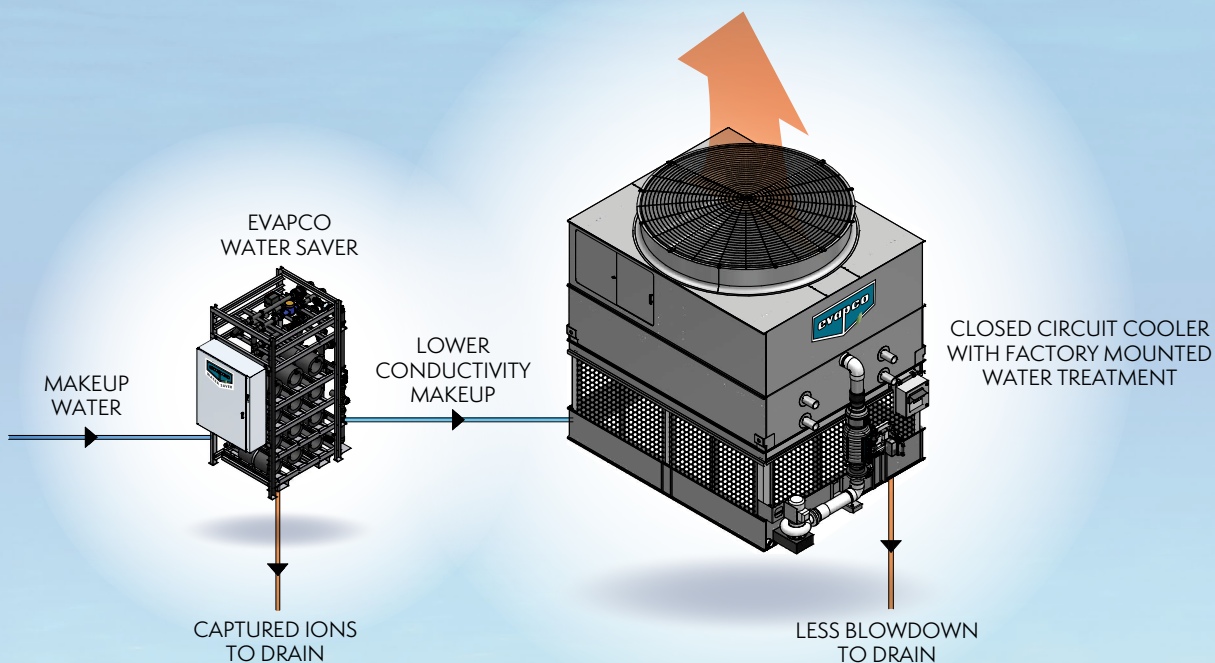
Makeup water flows into a cylinder



Supercapacitors attract oppositely charged ions from the makeup water



Supercapacitors reverse polarity to reject ions to drain at reduced flow rate



### EVAPCO Water Saver:

Utilizes capacitive deionization technology to reduce dissolved ion concentration, thus lowering the makeup water conductivity prior to use in an evaporative cooling system. Makeup water entering the Water Saver passes through individual cylinders which contain oppositely charged supercapacitors. Dissolved ions (except silica) are removed from the water as they are absorbed onto the charged capacitors. A typical 50% ion reduction allows the operating cycles of concentration to be safely doubled without an increase in scale or corrosion potential.

## Water Saver Benefits

- 💧 Improves Water Efficiency by Increasing Operating Cycles of Concentration
- 💧 Reduces Blowdown and Treatment Chemicals Sent to Drain
- 💧 Routine Monitoring by EVAPCO Authorized Service
- 💧 Low Cost of Ownership
- 💧 75 - 90% Recovery Rate
- 💧 LEED Points



### Water Efficiency Potential for 1000 Ton System:

Doubling Cycles of Concentration ("COC") with the Water Saver increases your water efficiency!

2.0 to 4 COC = 23,000 gpd SAVED  
 2.5 to 5 COC = 13,000 gpd SAVED  
 3.0 to 6 COC = 7,000 gpd SAVED  
 4.0 to 8 COC = 5,200 gpd SAVED

#### Water Efficiency Equations

$$\text{Blowdown} = \frac{\text{Evaporation}}{\text{COC} - 1}$$

$$\text{Cycles of Concentration} = \frac{\text{Recirc Conductivity}}{\text{Makeup Conductivity}}$$

(Applies to Chemically Treated System only)

$$\text{Cycles of Concentration} = \frac{\text{Makeup Rate}}{\text{Blowdown Rate}}$$

(Applies to All Systems)

### Engineering Data

Model Number	Length (in.)	Width (in.)	Height (in.)	Voltage	FLA	# of Cylinders	GPM Clean Makeup
EWS - 22	63-1/2	46-3/8	83-1/4	230/480	21.5/13.1	4	6 - 10
EWS - 23	63-1/2	46-3/8	83-1/4	230/480	21.5/13.1	6	9 - 15
EWS - 24	63-1/2	46-3/8	83-1/4	230/480	21.5/13.1	8	12 - 20
EWS - 33	78-1/2	46-3/8	83-1/4	230/480	21.5/13.1	9	13 - 22
EWS - 34	78-1/2	46-3/8	83-1/4	230/480	21.5/13.1	12	18 - 30
EWS - 53	115-1/4	46-3/8	83-1/4	230/480	36.5/23.1	15	22 - 37
EWS - 54	115-1/4	46-3/8	83-1/4	230/480	36.5/23.1	20	30 - 50
EWS - 63	130-1/4	46-3/8	83-1/4	230/480	36.5/23.1	18	27 - 45
EWS - 64	130-1/4	46-3/8	83-1/4	230/480	36.5/23.1	24	36 - 60

#### Notes:

- Unit is designed for indoor installation
- A sanitary drain is required to dispose reject cycle water
- Inlet water pressure requirement: Min = 50 psi; Max = 120 psi
- Electrical Service requirement: 230 V, 3 ph, 3 wire (delta) or 480 V, 3 ph, 4 wire (wye)
- "GPM Clean Make-up" capacity for each model is variable within the flow rate range shown, dependent of raw make-up water quality.



## Water Efficiency Technology Comparison

	Water Saver	Reverse Osmosis	Water Softener	Acid
High recovery rate (75 - 90%)	4	8	4	N/A
Negligible Energy Use (below 19.2 kW)	4	8	4	4
Protected from increased corrosion if upset occurs	4	8	8	8
Protected from increased scaling potential if upset occurs	4	8	8	8

## EVAPCO Water Saver Benefits (one customer example):

### Water Savings

A food manufacturer planning to replace a large evaporative condenser installation with new units also wanted to replace their chemical water treatment system due to the high potential for corrosion with acid feed. EVAPCO analyzed the site make-up water and recommended a Smart Shield® solid chemistry solution at 3 cycles of concentration, resulting in a blowdown requirement of 13 million gallons per year. However, unfortunately, the food manufacturer did not have discharge permits for the required 13 million gallons per year of biocide laden blowdown from the condensers. By adding an EVAPCO Water Saver the plant can raise their cycles of concentration from 3 cycles to 6 cycles, thereby decreasing their blowdown requirement (i.e. water sent to drain) by 4.7 million gallons per year. The EVAPCO Water Saver allows the food manufacturer to meet their permitting requirements while saving money on costs for water use, sewer discharge and chemicals.

### Chemical Savings

Decreasing the amount of water sent to drain reduces water treatment cost by reducing the amount of chemicals that need to be replenished in the system. For this food manufacturer, reducing blowdown by 4.7 million gallons per year equates to a 36% reduction in chemical use and an estimated water treatment savings of \$23,000 per year. Additional benefits include reduced chemical shipment, handling and storage as well as reduced chemical load on the downstream municipal water treatment plant.



# Full Spectrum of Water Treatment Solutions



**Water Saver**  
Pre-Treatment System



**Pulse~Pure®**  
Non-Chemical Treatment



**Smart Shield®**  
Factory Mounted  
Solid Chemistry  
Water Treatment



**Smart Shield®**  
For Open Towers and  
Remote Sump Applications

**Factory Assisted Passivation**  
Galvanized Coil Treatment



View the Water Saver Video and Guide Specification to learn more:

[www.evapco.com](http://www.evapco.com)

Contact your local EVAPCO Sales Representative or EVAPCO® Headquarters for more information.



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