Pulse-Pure®
Non-Chemical Water Treatment System

Technology for the Future...Available Today!
The Wilson E. Bradley Global Research & Development Center, located at world headquarters in Maryland, includes six state of the art environmentally-controlled testing laboratories and a water analytical laboratory devoted to advanced research in support of our water treatment programs.

EVAPCO’s research and development focuses on thermal performance verification, market leading heat transfer research, and low temperature testing with a paramount emphasis on developing sustainable products and technologies... *Pulse~Pure®* Non-Chemical Water Treatment is a result of this commitment.

Water Analytical Services supports the application and ongoing development of *Pulse~Pure®* Non-Chemical Water Treatment, as well as research on passivation, corrosion, and new materials. This division utilizes advanced equipment in the field of analytical chemistry, including Ion Chromatography and Atomic Absorption Spectroscopy, giving EVAPCO the ability to conduct fast and accurate analyses of both chemically and non-chemically treated systems.
EVAPCO’s Pulse~Pure® Water Treatment System offers an environmentally responsible alternative for treating cooling water. EVAPCO’s patented and patent pending Pulse~Pure® innovation utilizes pulsed-power technology to provide chemical-free water treatment with no harmful by-products. This cutting edge technology enables you to rely on one trusted supplier for your evaporative cooling equipment and associated water treatment — EVAPCO!

Furthermore, your Pulse~Pure® purchase includes a one year cooling water monitoring program performed by EVAPCO’s factory trained representatives.

**Pulse~Pure® FEATURES**

- Compact Design with No Moving Parts
- Factory Installed Option Available on Coolers and Condensers *(shown below)*
- Low Energy Consumption
- No Treatment Chemicals Required
- Manufactured and Warranted by EVAPCO
- Performance monitored by an EVAPCO Authorized Service Organization

**Pulse~Pure® INTEGRATED CONTROLLER FEATURES**

- **Integrated Conductivity Controller** — The Pulse~Pure® system integrates a micro-processor driven conductivity controller with a temperature compensated toroidal sensor. One location for conductivity and Pulse~Pure® control!
- **Single Power Feed** — One 120 volt or 460 volt service feed is all that is required to power the Pulse Panel and Integrated Conductivity Controller.
- **USB Port** — Incorporates an audit trail which can document up to 60 days of system operation.
- **Water Meter Inputs** — Includes ability to track and document water usage from make up and blowdown water meters (meters by others).
Pulse~Pure® Technology Provides...

**SCALE CONTROL**

*Pulse~Pure® technology controls the formation of mineral scale* (calcium carbonate) *by creating “seed crystals” from small suspended particles in circulating cooling water. As the Pulse~Pure® treated water is cycled up beyond normal solubility, the calcium carbonate precipitates onto the seed crystals eventually settling out in the basin of the evaporative equipment as non-adherent powder. The result is clean heat transfer surfaces coupled with crystal clear basin water.*

**MICROBIOLOGICAL CONTROL**

*Pulse~Pure® technology controls biological growth by two physical mechanisms; agglomeration and electroporation. Agglomeration is the mechanism where seed crystals form with calcium carbonate and trap bacteria and other small particles in the growing matrix. These trapped bacteria cannot ingest food nor reproduce and become inert. Electroporation is the process of damage to the bacteria’s cell wall caused by the pulsed electric fields generated in the Pulse~Pure® chamber. These damaged bacteria devote energies to repair in lieu of reproduction resulting in extremely low bacteria counts. Both of these mechanisms of bacteria control are physical and non-species-specific thus reducing the bacteria’s ability to mutate or adapt to defend against the treatment. EVAPCO guarantees that total bacteria counts will not exceed 10,000 CFU/ml (Colony Forming Units per Milliliter) in the cooling water of an operating Pulse~Pure® treated system.*

**CORROSION CONTROL**

*Pulse~Pure® technology controls corrosion by operating in an alkaline environment beyond the normal saturation for calcium carbonate. These operating characteristics allow calcium carbonate to act as a natural cathodic corrosion inhibitor. Corrosion potential is reduced further by the elimination of the need for feeding corrosive oxidizing biocides and other potentially harmful chemicals. Operating Pulse~Pure® systems typically exhibit uniform corrosion rates equivalent to most chemically treated systems without the risk of aggressive localized corrosion noted in some chemically treated systems.*
**Pulse~Pure® ENGINEERING DATA**

**Pulse~Pure® Integrated Controller**

**Pulse~Pure® Water Treatment System Engineering Data and Power Requirements**

<table>
<thead>
<tr>
<th>Model</th>
<th>Pipe Size (in)</th>
<th>Amps (120V / 460V)</th>
<th>Max Flow (gpm)</th>
<th>PURIFICATION CHAMBER</th>
<th>PULSE PANELS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Max OD (in)</td>
<td>Length (in)</td>
</tr>
<tr>
<td>P-3</td>
<td>3</td>
<td>1.3 / 0.3</td>
<td>275</td>
<td>11-1/2</td>
<td>43-1/4</td>
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<tr>
<td>P-4</td>
<td>4</td>
<td>1.5 / 0.4</td>
<td>475</td>
<td>11-1/2</td>
<td>43-1/4</td>
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<tr>
<td>P-6</td>
<td>6</td>
<td>2.5 / 0.7</td>
<td>1,100</td>
<td>15</td>
<td>48-3/8</td>
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<tr>
<td>P-8</td>
<td>8</td>
<td>4.0 / 1.0</td>
<td>1,900</td>
<td>15</td>
<td>48-3/8</td>
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<td>P-10</td>
<td>10</td>
<td>6.3 / 1.6</td>
<td>3,000</td>
<td>20-1/4</td>
<td>55-1/4</td>
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<td>P-12</td>
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<td>7.5 / 2.0</td>
<td>4,200</td>
<td>20-1/4</td>
<td>55-1/4</td>
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<td>P-14</td>
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<td>66</td>
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<td>P-16</td>
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<td>11.3 / 2.9</td>
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<td>66</td>
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</table>

**NOTES:**
(1) Units are designed for a maximum water temperature of 130°F. Units are not designed for boiler applications.
(2) Units are standard with 120V NEMA 4 electrical pulse panels. Optional NEMA 4X and 460V available.
(3) Purification chamber flanges ship mounted for field installation.
(4) Pipe assembly is Schedule 80 PVC with a water-resistant purification chamber housing.
(5) Units are UL and cUL approved. FCC title 47 CFR compliant and have a Total Harmonic Distortion less than 15%.

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**EVAPCO is doing its part to protect water resources by eliminating the discharge of chemicals into our waterways. Combining Pulse~Pure® Non-Chemical Water Treatment with Evaporative Cooled Equipment contributes toward satisfying the following credits under the LEED®v3 Green Building Rating System:**

### WATER EFFICIENCY*

**WE Credit 1, Option 1: Water Efficient Landscaping:**
Reduce potable water consumption for irrigation by 50%

**WE Credit 2, Option 2, Path 1: No Potable Water Use or Irrigation:**
Use only captured rainwater, recycled wastewater, recycled graywater or water treated and conveyed by a public agency specifically for nonpotable uses for irrigation

**WE Credit 2, Option 1: Innovative Wastewater Technologies:**
Reduce potable water use for building sewage conveyance by 50% through the use of water-conserving fixtures (e.g., water closets, urinals) or nonpotable water (e.g., captured rainwater, recycled graywater, on-site or municipally treated wastewater).

**WE Credit 4: Process Water Use Reduction (Schools Only)**
To reduce wastewater generation and potable water demand while increasing the local aquifer recharge.

*Note: Check with appropriate government agencies for local discharge water regulations.

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### INDOOR ENVIRONMENTAL QUALITY

**IEQ Credit 5: Indoor Chemical and Pollution Source Control**
To minimize building occupant exposure to potentially hazardous particulates and chemical pollutants.

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### INNOVATION IN DESIGN

**ID Credit 1: Innovation in Design**
EVAPCO seeks to support the USGBC mission of reducing air and water pollution by minimizing the operational hazards associated with the transportation, handling, and storage of toxic chemicals.

†The LEED® (Leadership in Energy and Environmental Design) Green Building Rating System is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings.
Pulse~Pure® APPLICATIONS

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

EVAPCO, Inc.
World Headquarters
5151 Allendale Lane
Taneytown, MD 21787 USA
Phone: 410-756-2600
Fax: 410-756-6450
e-mail: marketing@evapco.com

EVAPCO Europe, N.V.
European Headquarters
Industrieterrein Oost 4010
3700 Tongeren, Belgium
Phone: (32) 12-395029
Fax: (32) 12-238527
e-mail: evapco.europe@evapco.be

EVAPCO Asia/Pacific Headquarters
1159 Luoning Rd. Baoshan Industrial Zone
Shanghai, P.R. China, Postal Code: 200949
Phone: (86) 21-6687-7786
Fax: (86) 21-6687-7008
e-mail: marketing@evapcochina.com

Visit EVAPCO’s website: www.evapco.com