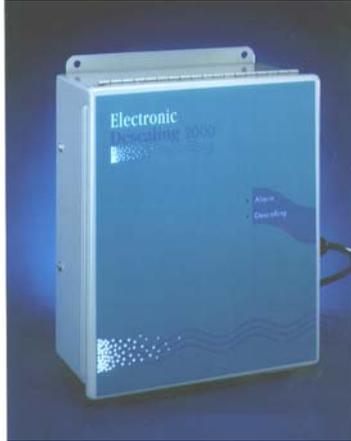


ED 2000

AN INNOVATIVE SOLUTION TO MAINTAIN CHILLER EFFICIENCY



Innovative Solution to Scaling Problems

Scale build-up can foul a chiller's condenser tubes, increasing the thermal resistance of the heat exchanger. This in turn increases energy use and costs. Once scaling has occurred, traditional removal methods are expensive and time consuming. In addition, these methods may shorten tube life, resulting in premature tube replacement.

That's why we offer the ED 2000 system. Its unique electronic process prevents scale fouling without caustic or abrasive cleaners. By eliminating scale accumulation, the ED 2000 technology improves chiller performance, resulting in substantial energy savings and reduced maintenance costs.

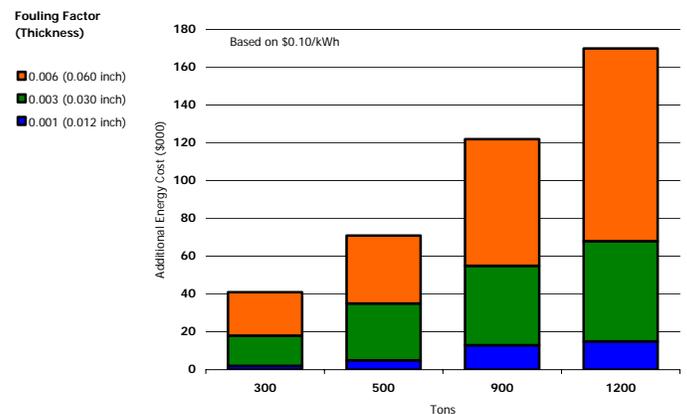


Extensive Research and Experience

The ED 2000 technology was developed and tested through a collaborative effort with a major research university in the United States. There have been over ten patents issued for the technology. The technology and its theory have been published in many technical journals, including the ASHRAE Journal and the International Journal of Heat and Mass Transfer. The system has been used effectively for over 10 years on hundreds of applications.

Save Energy by Eliminating Scale

Chiller energy consumption is dependent on several factors: chiller efficiency, operating hours, cooling load, cost of electricity and the amount of tube fouling. The chart below shows additional energy costs due to fouling. For example, when the fouling factor is 0.003 (0.036-inch scale thickness) the additional energy cost per year for a 500-ton chiller is \$25,300 – money you'll save with the installation of an ED 2000 system.



Superior to Traditional Maintenance

With the addition of an ED 2000 system as part of your water management program, you eliminate the hassles of cleaning tubes with acid, steel brushes and abrasives. You also save the wear and tear on tubes caused by these cleaning methods. The downtime required for these maintenance procedures will also not be necessary.



Tube Bundle Before ED 2000

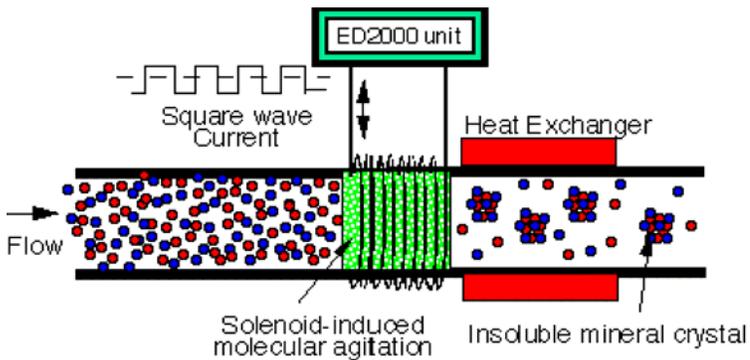


Tube Bundle After ED 2000

Simple to Install

The ED 2000 system is easily installed because no invasive procedures or system shutdowns are required. A solenoid coil is externally fitted to the condenser inlet pipe and wired to a controller. As a result, there is no downtime or threat to system reliability.

ED 2000 SYSTEM SPECIFICATIONS



ED 2000 Operation

Without the ED 2000 system, as tower water is warmed in the chiller condenser, dissolved mineral ions precipitate out of the water and adhere to condenser tube walls. Over time, soft deposits, and eventually hard scale forms. This accumulation increases thermal resistance and can even restrict water flow.

The ED 2000 technology prevents scale fouling by inducing dissolved mineral ions to precipitate into larger crystals, which pass through the condenser without adhering to the tube walls. The ED 2000 control unit sends a square wave pulsed current through a solenoid coil, which is wrapped around the condenser inlet pipe. The pulse induces an oscillating electric field within the pipe.

The mineral ions passing through the solenoid coil are agitated by the continual change in the oscillating electric field and subsequently precipitate into insoluble crystals. The crystals pass through the condenser without fouling the tubes, and then settle in low velocity areas such as the cooling tower basin. There they can be removed via filtration or blow down.



Installation

Installation is completely non-invasive. The hardware includes an electronic control box and a pre-wrapped solenoid coil enclosed in a weather resistant housing that attaches to the control box. The housing installs around the pipe to be treated and does not require any system shutdown for installation. Total installation time is typically less than 20 minutes.

Specifications

Control Box

Dimensions: 12" L x 10.5" W x 5" D
Weight: 16 lbs.
Electrical Input: 110-240 VAC, 50-60 Hz
Temperature: 0 – 140 deg. F
Enclosure: NEMA 12

Solenoid Coil

Pipe Sizes Available: 1" – 18"
Dimensions: Varies based on pipe size
Weight: Varies based on pipe size
Wire: #18 gauge lead wire
Temperature: 0 – 180 deg. F
Enclosure: ABS plastic weather resistant

ED 2000 PLUS THE NEXT GENERATION IN TOTAL COOLING WATER TREATMENT

The ED 2000 PLUS is the **newly enhanced** version of the ED 2000 technology, which is designed to offer a complete non-chemical option to treat cooling tower water. There is a global trend away from chemical use and toward water and energy conservation. The ED 2000 PLUS combines engineering and science to treat water effectively without the use of chemicals.

The ED 2000 PLUS continues to provide superior scale control, but also contains a sweeping frequency of alternating polarity, which provides microbiological control in cooling towers as well. In recent studies, this sweeping frequency at high ranges has been shown to cause a kill of biological growth.

Corrosion is addressed by maintaining the cooling water in a stable, alkaline pH range without any adjustments. The suspended scale crystals formed by the ED 2000 PLUS provide a monomolecular, non-adhering buffer on the metallic surfaces to protect against corrosion as well.

The inclusion of a media filter or centrifugal separator with any ED 2000 PLUS system is highly recommended to remove suspended particles. By filtering debris scrubbed from the air, nutrients are removed that can cause corrosion or biofouling.

This is all accomplished through an installation that is as simple and non-intrusive as a traditional ED 2000 system installation.

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