

ED 2000

ED 2000 Electronic Anti-Fouling System

ELECTRONIC DESCALING 2000

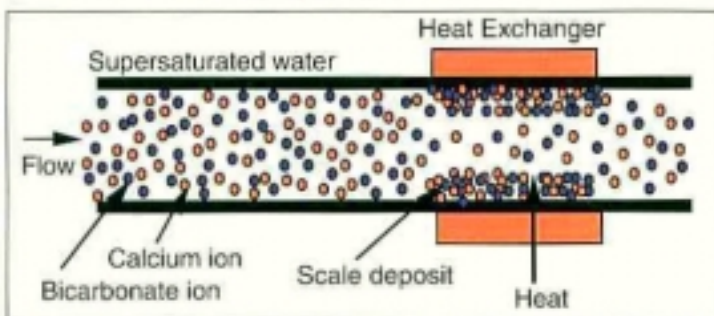
PROBLEMS WITH SCALE

As we approach the year 2000, scales remain a serious problem to all industries that heat water in their process. This is because the thermal conductivity of calcium carbonate is approximately 400 times smaller than that of copper or brass. Hence, a very thin scale layer significantly reduces the overall performance of the heat transfer equipment. Furthermore, the flowrate decreases in a scaled tube. Other problems caused by scales include

- increased thermal resistance
- increased downtime for cleaning
- increased energy expense
- increased waste water discharge
- premature replacement of heat transfer equipment
- oversizing the design to address scale resistance

WHY DOES SCALING OCCUR?

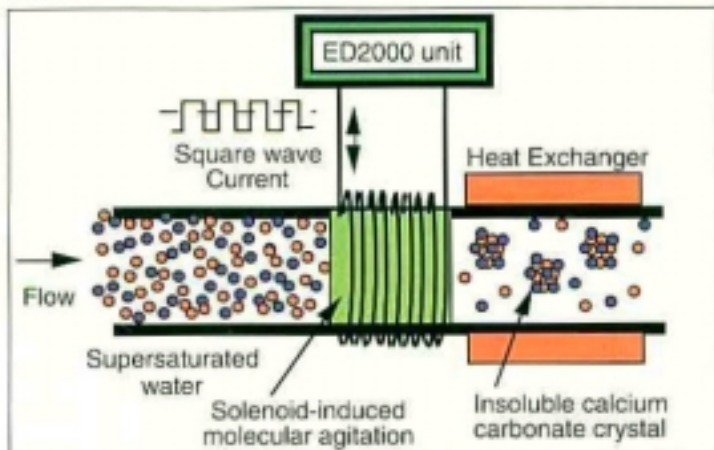
The source of scaling problems lies in hard water which contains excess mineral ions such as calcium and magnesium. Because of the inverse solubility laws, these mineral ions precipitate as hard water is heated, resulting in the deposition of scales on heat transfer surfaces, a phenomenon we call "uncontrolled precipitation."



"Uncontrolled precipitation" from the use of hard water.

ED2000 TECHNOLOGY INHIBITS SCALES THROUGH CONTROLLED PRECIPITATION.

The key to the Electronic Descaling 2000 technology and its success relates to understanding water chemistry and the dynamics of the heat transfer equipment. The ED2000 unit treats the water before it enters the heat transfer equipment. The unit produces a solenoid-induced molecular agitation (SIMA™) to precipitate dissolved mineral ions to large insoluble mineral crystals. By this "controlled precipitation" the crystals suspend in the water and do not adhere to metal surfaces, inhibiting the formation of scales.



"Controlled precipitation" converts dissolved mineral ions to insoluble crystals, thus preventing new scale.

A TECHNOLOGY COME OF AGE

The ED2000 technology was developed and tested through a collaborative R&D effort with a major research university in Philadelphia, PA. The results of the R&D effort are:

- nine new patents filed
- perfected technology to assure consistency
- field tested with major manufacturers
- chemical free, environment friendly technology

BENEFITS

The ED2000 technology allows the user to avoid the problems and costs associated with scale in heat transfer equipment. Thereby it can:

- maintain and improve performance
- delay and avoid shutdowns
- save energy and water
- enable downsizing to a smaller unit saving size, weight and cost

APPLICATIONS

The ED 2000 unit will enhance the performance of most heat transfer equipment which include

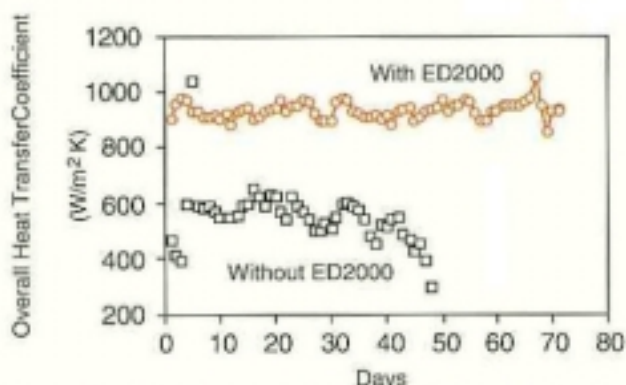
- heat exchangers (shell-and-tube, plate-and-frame, and spiral)
- chiller and cooling tower
- evaporator and condenser
- hot water heater and boiler
- pump and transport line

INSTALLATION

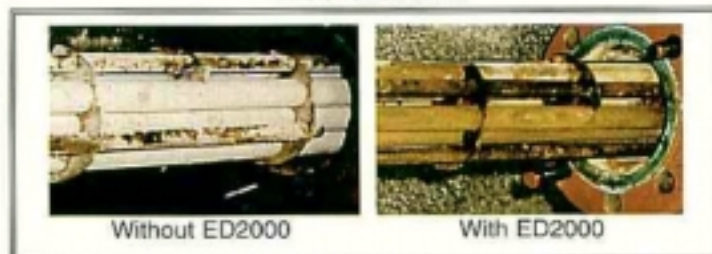
The installation of the ED2000 unit is easy and non-invasive. The turn-key "kit" includes an electronic control box and a solenoid, preformed into a flexible oblong "wrap", that can be readily attached to the control box. The unit can operate on either 110V or 220V outlet. Installation takes less than 20 minutes for most applications.

PERFORMANCE VALIDATION

The ED2000 unit has been extensively tested at various industrial applications. Typical results are shown below.



The ED2000 technology prevents scale build-up in a shell-and-tube heat exchanger, thus maintaining the maximum overall heat transfer coefficient.



Tests performed on a shell-and-tube heat exchanger show the removal of scale on tubesheet surfaces with ED2000.