

HEAT EXCHANGERS

ABSTRACT:

Heat exchangers are an excellent application for magnetic water treatment. They are used to raise or lower the temperature of water (occasionally they will use some medium other than water such as ethylene glycol). Construction of heat exchangers is normally cylindrical with diameters from less than one foot to up to three feet. The length can vary from two to eight feet. Water from a boiler, cooling tower and occasionally a geothermal system is pumped through a series of tubes inside the heat exchanger. Water is circulated between the outer shell of the heat exchanger and the tubes. The heat transfer takes place as the controller water transfers a temperature change through the tubes into the water inside the shell. Scaling takes place on the tubes inside of the heat exchanger. This scaling greatly reduces the efficiency of the heat exchange and requires shut down and either acid or mechanical cleaning of the exchanger.

INSTALLATION:

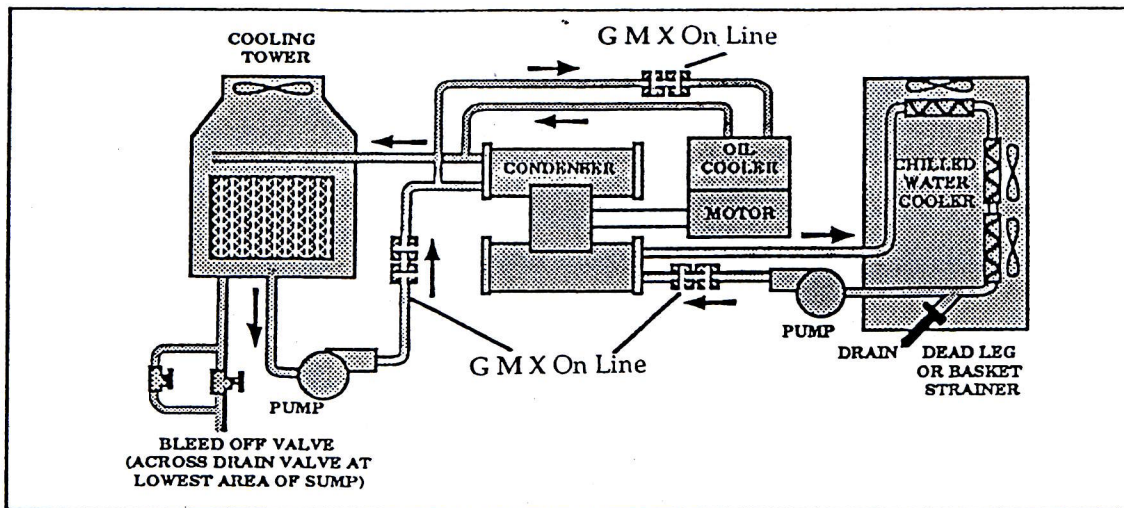
Magnetic treatment assemblies should be placed on the pipe that feeds water to the section of the heat exchanger that has the scale problem. The assemblies should be installed on nonferrous pipe (copper, PVC or stainless steel) only. If the heat exchanger is plumbed in steel, a minimum 24" section of the pipe should be removed and replaced with copper. The assemblies should be installed, if possible, one foot to three feet before the heat exchanger.

WHAT TO EXPECT:

With magnetics, the scale will be removed within five to eight weeks depending on water chemistry and volume of water used. In some instances larger pieces of scale may break loose and could clog the heat exchanger. Approximately eight weeks after installation, the heat exchanger should be opened for inspection to assure that the units are performing as designed. Any remaining sludge or scale residue can be removed at that time.

RESULTS / BENEFITS

Any existing scale will be removed and no further scale should accumulate. The heat exchanger will operate far more efficiently and require less energy and less water. Increased equipment life should be realized due to reduction or elimination of corrosion. Temperature control is easier if the equipment is able to operate as designed without scale.



Air Conditioning or Refrigeration Cooling Tower (Heat Exchanger) Installation

In many heat exchangers the coolant flows over the elements and deposits are left on the exterior of these elements. Installation of the On Line units "upstream" from the condenser will prevent scale formation on these surfaces.