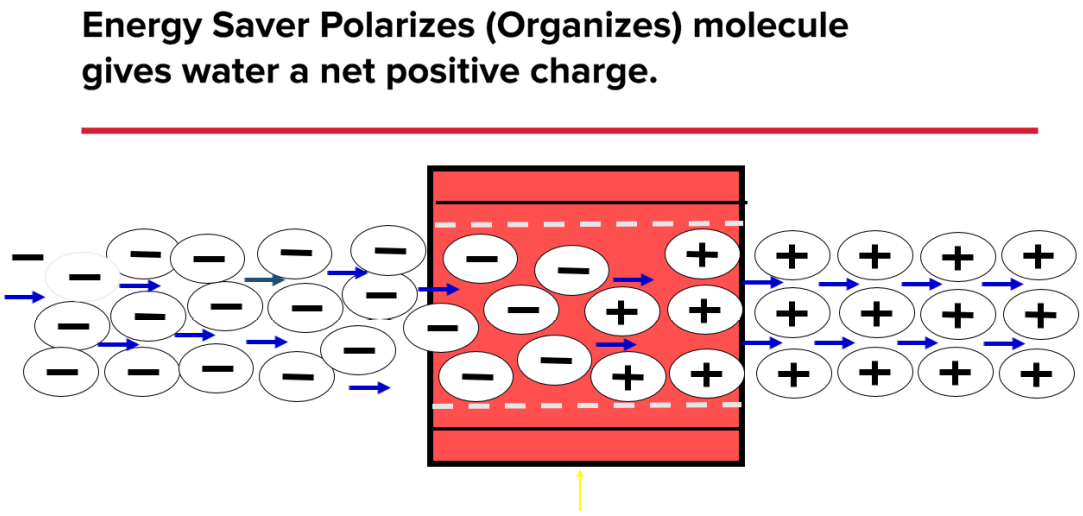
Concept and working principle

Water flowing in the soil is affected by the Earth's natural magnetic field and has a higher potential than the surrounding rock and thus creates an attractive force, dissolving the limestone and other mineral salts (mainly calcium and magnesium), much the same as sugar or salt dissolves in a glass of water. One has to remember that these minerals play an extremely important role in the metabolism of all living organisms, which constitutes the foundation of all biological processes. The minerals dissolved in soil are subsequently carried into pipes, installations & water process equipment. These metals having in turn a higher potential than water, attract those minerals which, when drawn, seed and conglomerate (crystallize) back into rock like formation, i.e. "calcite" ("scale"). When the soluble calcium bicarbonate, CaHC03, changes to the less hydrated, insoluble calcium carbonate (CaC03), the result is doubly harmful, since water looses these beneficial minerals and the accumulating sediment destroys water installations. Because of the overwhelming negativity of the C03 component, the Calcium Carbonate molecule possesses a net negative charge, resulting in a few attractive forces between it and water (in untreated water there is always a low concentration of Carbonate that remains dissolved).

Scale is one of the basic problems that exist in the technological processes that deal with water (heating, cooling, chilling, heat exchanging, evaporation, condensation, etc.). This is the phenomena that harm equipment and installations by the crystalline precipitates due to the loss of C02 gas from water when its temperature rises. These crystals, above all composed of calcium and magnesium salts, form a thermal isolator, which is very hard and difficult to remove, since calcite appears in a less hydrated form with hard surface bonds. The scale problems mean only one thing: needless consumption of energy for water heating (each millimeter of scale represents 8-10% energy loss), imminent corrosion deterioration due to scale-metal electrolysis, as well as overheating of wails of the heating elements, clogging of piping, money spent on cleaning chemicals, brushing, accompanying down-time, or the polluted environment (water table). This is why we highly recommend use of the ENERGY SAVER and make it our mission to educate people about its benefits.



Ground water contains thousands of particles and microelements whose impurities give rise to the surrounding electron shells: cations (+), anions (-). "Pure" water is a polar liquid, i.e. part of the water molecule has a positive and part of it has a negative, electrical charge, but overall the net electrical charge is negative. Thus, the water molecule being a small magnet (dipole), one may effect its magnetic (or electric) field by causing the molecule to turn or rotate in one direction or the other, taking on a positive or negative higher potential, depending, whether the S (South, positive) or N (North, negative) outside magnetic field has been applied.

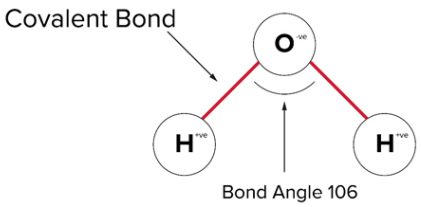
Why Magtreat?

Generally when water is over saturated, that is solvent properties are exceeded, water will tend to give off or precipitate the excess minerals. This condition is scale formation. Scale is composed of minerals, once dissolved in water but released as scale. Scale formation takes place whenever the solubility of the minerals in water is changed or the minerals themselves changed to less soluble minerals.

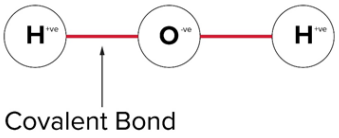
Heat form scale in the same way due to chemical breakdown of the bicarbonate scales. Water (without the minerals) is removed as steam and the mineral concentration in residual or make-up water increases, then scale deposition begins. The scale caused by heat or agitation is normally composed primarily of carbonates. Scale caused by heat or evaporation is normally composed primarily of carbonates and sulphates. Materials added to water, such as phosphates and silicates can under certain conditions also cause scale.

Normally, the molecules in a fluid are in a completely random configuration, due to having slight natural variance in their electrical net charges. As polar bodies they will react uniquely to the magnetic stimuli, depending upon the net charge of the outside force. For example, a positive charge (South Pole) would physically configure the fluid so that the negative poles of the molecules were closest to the magnetic source (opposite charges attract, like charges repel). After passing through the influence of the direct external magnetic force there is a transformation of the randomly oriented population into an ordered matrix of molecules : the molecules with greatest opposite net charge will be closest to the stimulus and conversely, those with the greatest like net charge will be furthest away. The energized and amplified (magnetized) molecules, like little magnets, uniformly line up end-to-end as the net charges are all equalized by being energized by the external magnet influence. Thus the polarization consists of changing the chaotic molecules of liquid or gas fluid into such fluid which has equal charge and is uniformly linearized. Exposure to a magnetic South Pole field affects an atom's electron spin in such a way as to compact the size of the electron orbit. For the H^O molecule, the hydrogens, which are bonded to oxygen by "sharing" the oxygen's electrons, are drawn closer to the oxygen atom This action changes the bond lengths and in turn, the bond angles, from a triangular formation to a more close linear configuration. In the magnetized "linear" condition, the more positively charged hydrogens (H) tend to shield the negatively charged oxygen. The result shielding is what changes the net negative charge of the non-magnetized water molecule to the net positive charge of the magnetized water. Therefore magnetizing will change the water's net charge so that the carbonate molecules are not allowed to aggregate and crystallize. This also works on dissolving existing crystalline structures (previous scaling) by cleaving bonds between the carbonate molecules via the same charge influence - an actual magnetic attraction of the carbonate molecule to the water molecule.

Schematic diagram of changes in structure of water molecule after MAGTREAT



Structure of (H2O) Water Molecule
BEFORE the installation of MAGTREAT



Structure of (H2O) Water Molecule
AFTER the installation of MAGTREAT.
Thus changes the Bond angle &
the water gains overall positive charge.

1. Control of Scale in water system using magnetic fields

It has been firmly established in the world of scientific theatre that the positive, expanding, field strength of South Pole makes liquid more soluble (lowering surface tension); thereby hydrating, dissolving and removing calcite and other minerals/other water by products accumulating in the pipes and process equipment. Exposure to magnetic South Pole field affects an electron spin in such a way as to compact the size of electrons orbit. For water molecules, the hydrogen atoms, which are bonded to oxygen by "sharing" the electrons, are drawn closer to the oxygen atom. This action changes the bond length, and in turn, bond angles, from a triangular configuration to a more close to liner one. In magnetized "linear" conditions, the more positively charged hydrogen tends to shield the negatively charged oxygen. The resultant shielding is what changes the net negative charge of non-magnetized hard water to a strong positive charge of magnetized water. Under the same magnetic molecular dynamics, the positive pole also declusters paraffin build up in oil transmission lines. Such S-pole induced change in the electron orientation affects the aggregation and crystallization of a water molecule causing increased hydration (water saturation), solubility and selective ionization, thus changing the fluid physically, structurally and behaviorally. The mobility of ions in water solution is considerably increased. This is a more solvent fluid flow in the process the associations clustering around the suspended particles are broken up as molecules line up for Polarization, The fluid's Para magnetic properties allows for more dissolved material to be-contained in it now due to increased efficiency of fluids available space. It appears that the magnetic treatment allows for more CO2 to stay dissolved in water of higher temperature. Calcium carbonate is

converted back to Calcium bicarbonate. With increased solubility of Co2, the pH is lowered, which also accelerates the decaling, the end product of which is "aragonite" a soft hydrated form of scale obtained through increased hydration. It is now maintained in colloidal suspension ready to be mechanically flushed from the system.

2. Control of Scale in water system using magnetic fields

Magnetizing will change hard water's net charge so that the carbonate molecules are not allowed to aggregate and crystallize. This also works on dissolving existing crystalline scales by cleaving the bonds between the carbonate molecules via the same charge influence. An actual magnetic attraction of the carbonate to the water molecules. But this is not only the mechanism it affects: a gross configuring action takes place. Air (oxygen valence -2) circulating in the installations has a strong negative charge that favors the electro chemical corrosion process. The magnetic field charges positively air and destabilizes micro-electrically this process creating a difference in potential between piping and air which permits to isolate and protect the system in reliable and permanent way. The electrolytic corrosion is stopped by magnetically binding the excess hydrogen or hydroxyl ions in water, responsible for embrittlement of piping, which are now bound up to the other molecules. This buffers the pH, reducing the wide pH variations within the fluids, regardless of outside influences; this is achieved by electrostatically changing the neutral water to positive state, whereas the increased electron excitement potentiates an immediate bonding of the free ions to the fluid at molecular level. In addition to this mechanism, once the potentiated fluid hydrates any mineral build-up, the pipe material remains clean and cannot ionically dissolve into the fluid, as there are no free ion to nucleate with the pipe material.

3. Makes Water behavior Soft Nature:

Without changing the chemical patterns of water, the *Energy Saver* lowers its surface tension, neutralizes pH, creates ability for oxygen to better dissolve in water (fuller oxygenation), and reverses hard water condition to a soft water behavior. Even though, from the chemical point of view, water is not soft, since its chemical composition is not changed, with the *Energy Saver* treatment however its physical properties are changed. As the science is the field of behavioral studies, it is accurate to state that it softens the water.

4. Reduces the Chemical Cost/use considerably:

With the *Energy Saver* one does not have to use softening chemicals any more (or their use is substantially reduced in heavy industrial applications) and still can obtain benefits of soft water. There are no harmful side effects and water is proclaimed safe and healthy for human consumption due to calcium and other minerals contained in it now (that are held in suspension). Being energized and declustered water becomes "wetter" and healthier- being also oxygenated is now contributing to better metabolism of living organisms

5. <u>Flush out Aragonite Frequently:</u>

When scale producing minerals pass through the magnetic field, they remain in suspension, and consequently in a close loop (non single pass down the drain) system, the minerals must be removed from the system by draining or flushing the system, since magnets are not used to transmit or destroy any chemical element in this methodology and the aragonite soup can become rather thick.

Energy Saver's water energizers descale cooling towers. Once installed, all descaling chemicals can be turned off a continuous yearly saving to the customer. In addition -the *Energy Saver* will reduce and eliminate the huge maintenance costs of drilling the tube bundles, acid treating the tower, chiller, piping etc. But with the *Energy Saver,* the automatic sensor which purges the reservoir with fresh water to reduce the TDS -now does not work, because the *Energy Saver's* descaling action suspends the minerals in a dissolved state that does not allow plating action on the probe which activates the sensor. This is especially important because the automatic purging sensor does not do its job i.e. give the signal to bleed off and the water is cycled too often increasing the calcium build-up, therefore a manual purge is to be set.

The *Energy Saver* can increase the number of cycles of concentration by its elimination of scale and dissolved minerals, this reduces the amount of purging or bleed-off necessary and saves make-up water. But it is necessary to advise the maintenance engineer that an automatic cycle timer, or manual bleed-off, must be used so there is no chance of calcium saturation build-up. With these huge savings that the *Energy Saver* eliminates on chemical and on maintenance costs, this is a simple, inexpensive procedure.

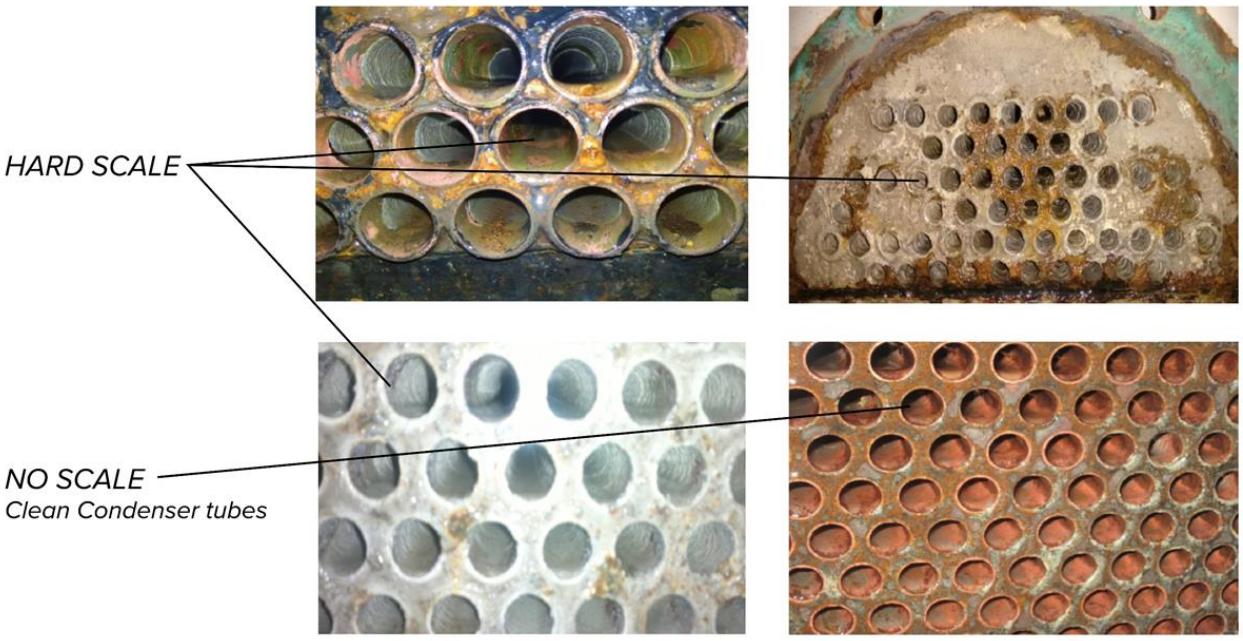
Remember - during the initial stabilization period, the calcium saturated water will build-up faster as it is being dissolved throughout the entire system, this will require more bleed-off during the descaling period.

Features

- Reduction in surface tension of water
- Enhancement in solubility of water
- Molecular alignment form random configuration to matrix
- Buffering effect on pH towards neutral
- Simple in design.
- No Power required as uses permanent Magnetic Technology.
- Easy to install and commission
- Maintenance Free & Environment Friendly.
- Dose Not add any pollution Problem

Benefits

- Reduce existing hard scale inside condenser tubes and cooling tower fills.
- To convert hard scale in to soft scale. (Calcite becomes Aragonite)
- To prevent further hard scale formation.
- Combination of Magtreat and Chemical treatment gives better control on scale.



Applications

MAGTREAT

A/C Plant Condensers

A/C Plant Cooling Towers

- HAVC
- Chiller condensers
- Cooling towers
- Shell and tube heat exchangers
- Power plant condensers
- Process condensers
- Process refineries