

## It's All Done With Magnetics

by Joe Fisher

Water purification technologies have come a long way in the past several years. In fact, the number of options open to pool and spa owners is far greater today than it was even five years ago.

One company... has developed a direct and simple means of water maintenance through application of high technology materials and methods developed originally for NASA's Space Program. That product ... uses magnetism to alter the basic nature of water.

When water - or any stream of atoms, for that matter - passes through a powerful, focused magnetic field, it changes physically in the same way atoms change when run through the particle accelerators used by physicists. In effect, the water is ionized; negatively charged oxygen ions are stripped from stable water molecules and are freed to perform a number of tasks. Among other things, the altered water can dissolve scum lines, help stabilize pH, kill algae and bond minerals in the water.

The pool or spa owner may never need to worry about iron, copper or calcium stains again. Moreover, because oils naturally emulsify in the ionized water, the spa or pool almost becomes self-cleaning.

The sanitizer level may also be reduced because it is not needed to combat algae growth, and acid bathing might become an infrequent chore. In addition, ionized water polarizes particles of debris into clumps large enough that they may be filtered out, which helps to improve water clarity, decreases odor and limit cases of eye irritation and dry skin. It also improves water solubility, helps reduce corrosion of metal parts in the system by adding needed electrons to the water, and makes the water act soft while retaining acceptable water hardness.

These advantages are a story in themselves, but this article is about the technology that makes the system possible and about the advantages of bringing high-technology materials to bear in the fight against water problems. The product comes

from a family of equipment known as the magnetic water conditioners: as originally developed with conventional magnet technology, these systems used huge magnets to focus tremendous forces (measured in gauss) at a center point in a magnetic field. This sort of magnetic field alters the physical qualities of the atoms passing through it; those changes aren't detectable using standard measurement technologies, but the list of advantages above indicates the sorts of effects those atomic alterations have on closed water systems.

As mentioned above, the magnetic field ionizes the water and produces negatively charged oxygen ions. This is a physical change, whereas, traditionally, changes in water have been caused by chemicals.

The magnets themselves aren't the kind we're used to seeing on refrigerator doors: They are lightweight, compact ceramics that pack thousands of gauss of magnetic pull into a small space. (The refrigerator magnets pack an insignificant fraction of that power in about the same space.)

The basic technology has been used in heavy industry for years for control of scale, algae and corrosion. What's new is the use of high-technology ceramics in the magnets. With these new designs, the same technology is now small enough and powerful enough to be practical for spa and pool use.

The system is simple and trouble-free. In most cases, the only maintenance to perform with a magnetic water conditioner is to ensure that water hardness and alkalinity are within normal ranges. Beyond that, the infrequent addition of small quantities of chlorine is required.

Simply splashing the conditioned water onto the scum line will dissolve it. Algae is controlled, pH is stabilized, minerals are polarized and the water is soft and silky. In essence, pool and spa owners simply find that time spent maintaining their pool or spa is reduced.