PLUMBING CONNECTION
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High-frequency water conditioning

A sustainable, chemical-free and cost-effective water treatment solution from SA is baffling experts and delighting customers…

High levels of minerals and chemicals in our water and wastewater cause a variety of operational, maintenance and environmental headaches such as water opacity, hardness, scale, corrosion, salinity, algae, blue green algae, fungal mould, iron bacteria, and chemical toxicity.

All of these problems are now being eliminated or prevented by an innovative computer-based technology called 'Hydrosmart', which generates a unique series of frequencies to condition the water. These frequencies affect the ability of minerals and chemicals to bond with each other. By reducing particle sizes to below 4 microns, many of the chemical interactions that would otherwise take place are minimised, reducing the potential for scale formation and corrosion.

The frequencies are transmitted into the water via antennae wrapped in tight coils around the water pipe. There are no flow restrictions and the system can effectively treat pipes up to 200mm (8 inches) in diameter, which means high-volume flows can easily be accommodated. The electronic circuitry that generates the signals requires very little power and can easily be adapted to solar applications. On mains supply each system consumes less than A$10 per year. If you consider that a 200mm pipe can accommodate flows in excess of 5 ML per day, this gives an astoundingly low cost-per-litre figure. As an added bonus the Hydrosmart system requires no maintenance other than a periodic check on the power supply (which must be surge protected).

The Spirit of Tasmania's Evac Toilet system is fitted with Hydrosmart technology.

Fan club

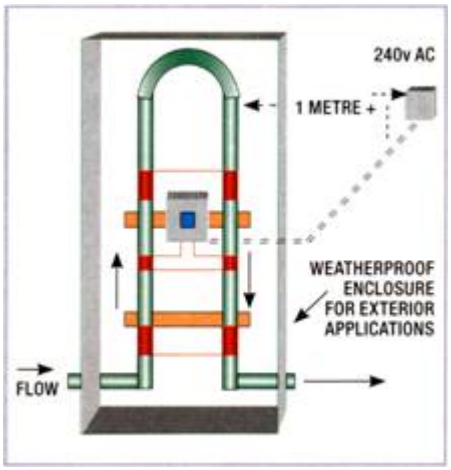
Hydrosmart's manufacturers have spent years inviting experts from industry, agriculture, and Federal and State Governments to witness the merits of this elegant, chemical-free water treatment technology. In particular, says director Paul Pearce, the company has sought out those scientists and government officials charged with finding solutions to environmental issues such as salinity and blue green algae. So far these attempts have largely proved fruitless, yielding only lacklustre interest, though Adelaide City Council has just used the technology in a Torrens Lake trial to observe the effects on blue green algae control and elimination.

The private sector, however, has been more receptive. Clients include: BHP, Berringer Blass, d'Arenberg Winery, Spirit of Tasmania, Hyatt Hotel, Mecure Hotel Broome, Ord River Sugar, Nang Yang Textiles, Bangkok Zoo, Next Generation Health Club, South Australian Dental Service, West Coast Turf, ChokChai Dairy Farm and Restaurant Chain, Cibo's Coffee Chain, Shiny Bright Laundries, Hard Rock Hotels, Club Med, Menindie Table Grapes, and a wide variety of commercial, agricultural and domestic clients, large and small.

Spirit of Tasmania, for instance, fitted Hydrosmart systems last year on the Evac Toilet systems and associated sewerage piping of its two passenger ships, Spirit of Tasmania I and II. These vessels (1400 passengers, 110

crew) incurred “little or no build-up of uric acid crystals, commonly found in such systems and the source of constant maintenance and infusion of costly chemicals,” according to Captain Anthony E. Beale. Hydrosmart treatment systems have been installed permanently on both ships following six-month trials.

Similarly, d’Arenberg Winery (150 acres under vine) in McLaren Vale, SA, has used Hydrosmart technology to soften its bore water. Irrigation drippers used to become clogged and blocked, but managing director F. d’Arry Osborn has reported clean pipes since installing Hydrosmart units three seasons ago.



Particle physics

Hydrosmart technology evolved from particle physics-based research, which recognizes that minerals and chemicals each have a basic bonding mechanism.

“This mechanism,” Paul says, “allows mineral crystals to form and chemical reactions to take place. By targeting and disrupting this mechanism, we can produce high-quality, useable water simply by breaking down the minerals and chemicals dissolved in the water to a smaller, non-reactive particle size and keeping them in solution.”

The technology was originally developed to prevent severe corrosive attack at very high temperatures and pressures in a wide variety of water supplies.

Electron polarity is influenced by magnetic and electromagnetic fields – hence magnets and electro magnets, if set up correctly, can have a beneficial effect on scale-causing minerals in water.

“It was established that electrons resonate at certain frequencies, and that this resonance confused their polarity sufficiently to neutralise some parts of the bonding process that allow electron pairs to form,” Paul explains.

“More importantly, it also showed that the electrons of different elements have different masses, or at least behaved as if they do, whereas conventional thinking has had it that all electron masses are identical.

“It therefore required a different frequency to resonate the electrons of different elements. This was very important as it meant that the electrons of the elements and compounds involved in the corrosion process could be targeted without affecting the structure of any of the other elements. This provided the tools to solve the corrosion problem, and paved the way for the basic development of Hydrosmart technology.

“By coincidence, many of the elements involved in the corrosive process are also implicated in other water-related problems. For example, sodium chloride is a major accelerator of the corrosive process but is also responsible for salinity issues; chlorides prevent plants from taking up calcium and other essential nutrients such as potassium and manganese. Hydrosmart causes chlorides to revert to free chlorine, which does not block calcium uptake, and so by solving the corrosion problem Hydrosmart has inadvertently provided a simple and sustainable solution to the salinity problem.

“This one fundamental change (breaking bonds) affects water uses at every level, from houses to farms and factories, buildings to swimming pools, aquaculture tanks to large lakes and dams, water to wastewater.”

Pollution reversal

Hydrosmart has also demonstrated an ability to reverse a wide variety of pollution problems that result from chemical water treatments or other agricultural or industrial processes. All of this is achieved without the need for filters, chemicals or high-energy costs, and by using a process that adds nothing to the water other than resonance frequencies.

Unlike most technologies that offer environmental benefits, Hydrosmart does not carry the hefty financial penalties that usually accompany the implementation of environmentally sustainable water and waste water remediation. This is because Hydrosmart technology is invariably cheaper than most of the technologies it replaces, has negligible running costs and minimal maintenance requirements.

The environmental credentials of the technology cannot be over-emphasized as all the water-related issues that have traditionally needed chemical treatments can now be resolved less invasively. This system not only provides a cheap and sustainable treatment solution, but also takes away a huge loading of chemical pollutants from wastewater, allowing nature’s bioremediation process to function much more effectively. This in turn makes the wastewater much easier and cheaper to process. Without the presence of chlorides, even unprocessed water such as back-flush water from swimming pools can be used for irrigation when treated with Hydrosmart.

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