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Electronic water conditioners - treating static water



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The Recent ruling by the Advertising Standards Authority concerning claims made by Hydropath (UK) Ltd, has highlighted the important differences between the newest breed of electronic water conditioners and the older magnetic or electrolytic systems according to Jonny Seccombe of Lifescience Products.

Published scientific papers show that magnetic and electrolytic systems operate by causing galvanic corrosion which release by-products into the water. These in turn interact with the dissolved calcium to stop precipitation on the pipes and heating surfaces. To operate effectively these devices must have a source of metals to corrode but if access to the metal is denied, the process slows down and stops. Most commonly a layer of deposits builds up over the corrosion source, arresting access and causing passivity. This is why magnets can have a relatively short effective life. A further draw back of these systems is that they rely on the flow of water to generate the electric charge that causes the corrosion. When the flow slows down or stops completely there is no protection from scaling.

Whilst very popular and widely used, especially as they are very easy for a Plumber to fit, the inherent disadvantages of magnetic and electrolytic systems are being increasingly recognised by Consultants and Specifiers.



By contrast, the electronic systems of which the Water-King from Lifescience Products is a prime example, operate in an entirely different way. Expressed most simply, the electronic water conditioner imparts a charge into the water which causes certain salts already in the water to generate nucleation seeds. The dissolved calcium in the water precipitates on these seeds in preference to the pipes and heating surfaces leaving them scale free. It is a two stage process. First the water is treated and then the calcium precipitates, normally because the water is heated. The best results are obtained if the water is treated while it is being heated and this is why electronic systems can be so much more effective.

Static Water

The proven capability of certain electronic water conditioners such as Water-King to treat static water is a very important feature of these products, making them very versatile in a wider range of applications. The signal generated in water by the wire coils wrapped externally around the pipe propagates throughout the water, upstream and downstream, continuously treating it both before and long after it has flowed past the coils. When metal pipes are cross bonded, the signal will also be transmitted through the pipe material, thus overcoming discontinuities caused by break tanks or plastic valves.

It is not necessary for water to pass through the wire coils to be effectively treated so a Water-King can be installed downstream from a T junction but still effectively treat the water in an upstream leg. This is a helpful feature when access to pipes is restricted or when pipe runs around an entry stop cock are too

short for a Water-King unit to be installed in the conventional location.

Cold water storage tanks are a potential problem for electronic water conditioners because any treatment to the water on the mains supply to the tank will decay once the water is static in a storage tank. Depending on water quality this decay can occur very quickly so relying on the memory effect is not advisable. Rather than treating the mains inlet to a tank, it is far more effective to treat the outlet from the storage tank. If there are multiple outlets and no linking manifold, the back signal from a single Water-King unit on just one of the cold drops is capable of treating all the static water in the tank.

Electric water boilers

Electric water boilers create special problems, especially if they incorporate their own cold water break tank. The discharge from the hot tank is often just a tap so it is impossible to treat the water at the discharge point. A Water-King with its aerial system can be adapted to treat these units. The cold inlet pipe to the water boiler should be treated with a Water-King in the normal way but the end of one of the aerials is left free to attach directly to the hot water tank or the chassis of the machine. In this way the water is continuously treated in the tank whilst it is being heated or held at temperature and scale prevention is far more effective. This technique of bridging the air gap is only possible with the double aerial system such as Water-King. It is also very effective for treating close-coupled vented water heaters such as the Fortic tank.

