

# Aquafacts No. 5

## Is installing a water softener really worthwhile?

This is a question that passes through nearly everyone's mind when contemplating the purchase of a water softening appliance. Understandably, the end result is intangible to most people, and unless one knows someone who has experienced living with softened water, it is often difficult to justify the cost.

There is no doubt that a water softener is an investment rather than an 'impulse' purchase. Most prospective buyers have often thought about buying a softener for many years before actually doing so. Within weeks of experiencing softened water the typical outcry is, 'why on earth did I not buy a water softener years ago'. Once purchased, a water softener is often moved from home to home, partly explaining why it is exceedingly rare to see a water softener being sold second hand.

Water softeners have been available since the first decade of the last century. They were then viewed as expensive products, appealing to the more affluent. Prominence was

### Did you know!

.....the water softener was one of the first appliances to be used regularly in the home. It was available way before the advent of the modern washing machine and was first mentioned in advertising literature in 1912.

then given to the luxury of silky soft water. In recent times the cost of water softening has come down as household expenditure has risen. This has given the product wider appeal. The sale's message is now based on the financial economies that can be achieved.

The cost savings with a water softener are a great deal more than is sometimes realised' giving a payback period within four to five years; second only to cavity wall insulation. The reduction in household cleaning products alone can save around £12 a month. When combined with other savings, such as reduced heating costs, the actual amount can work out nearer £25 a month for a family of four.

The advantages and benefits of a water softener are so wide ranging that everyone in the family will find something specifically important to them. It could be the practicality of improved heating efficiency, a reduction in appliance servicing costs, a cut of 50% plus in soap and detergent usage or the luxury of a scum free bath and more



An early advertisement in 'Homes & Gardens' in 1919. This is reduced from original size.

### Did you know!

.....one of the first full page colour advertisements to appear in a magazine featured the many advantages of a water softener. It appeared in 'Homes & Gardens' in 1921.

manageable hair. To a family member suffering from eczema there can be a considerable improvement to skin inflammation. There is more about eczema in our latest newsletter, where you can read about the SWET trial with the NHS and the Nottingham University Dermatology department.

Softened water is amazingly clean to live with. Spotting and staining are a thing of the past. Softened water will erode away existing hard water deposits. Matt and discoloured baths and basins will gradually regain their original lustre and the crud around the taps and blocked shower roses will completely dissolve away. The time spent cleaning up after hard water can be dramatically reduced.

One of the niceties of using softened water is being able to return to using more traditional soaps and cleaning agents. Over the years hard water has provided detergent manufacturers with the ideal vehicle on which to evolve new and more effective washing products, fabric conditioners, whiteners, rinsing aids, bleaches and other chemical concoctions. Polyphosphates and similar chemicals are employed to suspend the harsh actions of hard water so that a high quality washing action can be achieved. Some can be viewed as environmentally unfriendly. With softened water many of these are unnecessary. Water softener manufacturers can therefore recommend more 'lightweight'

### Did you know!

....the Royal Family has patronised softened water for many, many decades. There are water softeners in nearly every Royal residence in the country

washing powders and liquids such as Fairy and Ecover rather than the 'heavyweight' and sometimes more expensive Ariel and Persil products. Pure soaps such as Simple, Pears and Coal Tar perform far better than liquid soaps, which are detergent derivatives. Bubble bath liquids are unnecessary as soap, such as Camay, will fill a softened water bath with bubbles which will seemingly last forever.

### How practical and dependable is the technology of a water softener and is there a cheaper alternative?

As the havoc of hard water has been the bane of heating engineers since the era of steam, it is not surprising that there has been a constant necessity to find ways of overcoming scale and scum. This resulted in the evolution of 'ion exchange' during the latter years of the 19th

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A 'Permo 1', counter top, water softener and salt filling jug made by Royal Doulton, for the Permutit Company Limited, during the latter years of the 1930's.

century which enabled chalk and lime hardness minerals to be substituted (exchanged) for soft sodium extracted from salt.

All today's water softeners operate by this method. In simple terms this involves directing water through a small pressure vessel inside the water softener containing a bed of resin beads. This looks like compacted brown sugar. The hardness minerals are attracted and become attached to the resin and are replaced in the water with sodium 'ions'. This is a continuous process producing large volumes of a sodium biased softened water. The resin bed eventually becomes saturated with the hardness minerals and, with all

**Did you know!**

...that due to the problems of scale, domestic water treatment has been made mandatory with all boilers fitted into new and existing homes (Building Regulations April 2007).

the sodium depleted, cannot continue to soften. At this point an automatic regeneration takes place during which time a small amount of dissolved salt (sodium chloride) is drawn up from within the outer cabinet of the softener and is rinsed through the resin bed. The opposite now occurs. The hardness minerals are released into the brine solution while the sodium is imparted onto the bed. The residue of hardness minerals, chloride, sediment etc., is then washed away to drain. A final rinsing cycle then removes all traces of salt before the softener returns to its normal service mode.

At no time is salt ever added directly to the user's water supply. The cycle of softening and regeneration can be continued for many, many years. Modern resins are almost indestructible and often outlive the life of a water softener.

Although resin technology has been considerably refined in recent times the basics have changed surprisingly little since the concept was introduced from Germany in 1905. Even against the competition, 'ion exchange' is still respected as being the most effective, consistent and reliable method of softening water and more than justifies its cost. Ongoing servicing is negligible.



A range of domestic water softeners available in 1980

Over the years many products have come and gone purporting to give the same benefits as the water softener. In today's competitive market-place magnetic, electrolytic, electronic and chemical water conditioners ply for customers looking to rid themselves of hard water

problems. They may be cheaper but none can remove *completely* the constituents of hard water as competently as the water softener.

The theory behind many of these 'physical' water conditioning systems is a change to the molecular structure of the hardness minerals, putting them into suspension to prevent 'fur' from depositing. Recent studies show a wide variation in performance and power of such units and therefore, it is advisable to look carefully at what is on offer and to seek independent advice, a recommendation or a money back guarantee before purchasing. **Conditioners will not soften the water.** They can reduce scaling anything up to 80% but can be temperamental and unreliable. On the other hand **softened water is guaranteed to remove 100% of scale** (and scum). For more information on water conditioners see Aquafact sheet No. 19.



The latest compact, block salt, water softener from KINETICO

**Did you know!**

....an eczema trial, coordinated by Nottingham University and the NHS, may see water softeners being officially recommended for children with atopic eczema from 2010.

With the water softener having 'so much going for it' it is perhaps surprising how long it has taken to establish itself as a mainstream domestic appliance. Families who currently enjoy softened water would never be without one. Indeed if you know someone who currently has a water softener why not ask them what they think about softened water. The comments are usually more than positive.

The market for softening appliances has grown hugely over the last few years as more and more people recognise the benefits as summarised below:

- ◆ 100% removal of scale and scum guaranteed
- ◆ Lower servicing costs on boilers and appliances.
- ◆ More efficient heating systems.
- ◆ Clear, clean water which lathers easily.
- ◆ A 50%+ reduction in soap powders and cleaning products.
- ◆ Sanitaryware remains stain free.
- ◆ Skin and hair feel softer and cleaner.

.....and remember a water softener will pay for itself in around five to six years!

Aqua-Nouveau acknowledge the originators of the illustration and photographs reproduced above.