



halcyan
water conditioners

Edson Water Heater Manufacturers Testimonial and Implementation Background

17 July 2006

Dear Earl,

Subject: Positive effect of the Halcyan anti-scale system on scale build up.

Edson Hot Water Systems have contracts to supply commercial hot water systems for many applications throughout Australia. In 2002 a commercial hot water system was supplied to a new Coles supermarket in Australind in WA. Unknown to us it was a well known hard water area with high calcium deposits.

It was not long after the commissioning of the system that problems occurred with scale build up causing premature failing of the heating elements. These heating elements required replacement on many occasions during the warranty period anywhere from 3 to 6 weeks. The Coles management was not impressed with this situation, and our supply contract with Coles was placed in jeopardy of being cancelled unless we found a satisfactory solution to this problem.

I contacted one of our agents in this area, and Ray mentioned that he installed a new hot water system on his house 7 years ago and had the very same problem with heavy calcium and iron build up continually causing failure. Ray had purchased and installed a Halcyan Water Conditioner. Due to Ray's comments and living in the same area as the supermarket, we took the initiative to contact yourselves and purchase a Halcyan system.

Edson contacted Halcyan and were relieved to be given a sound explanation of how using Halcyan would rectify the problem we were experiencing. The correct Halcyan unit was selected, an installation position was recommended and the Halcyan was installed in August 2002 in the recirculating ring main immediately prior to the water entering the hot water system.

Since installing the Halcyan, there has not been any premature failure of the heating elements. Coles have specified the Halcyan system be installed on all new hot water system installations in Western Australia, coastal and known hard water areas. We have installed numerous Edson hot water systems with Halcyans, in a number of known hard water areas with fantastic results. We now offer Halcyan as a standard option to all our customers.

We would have no hesitation in recommending Halcyan as an anti scale device.

Yours sincerely

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Study Background

R. Edmonds & Sons have been designing, manufacturing and selling Edson water heaters throughout Australia for more than 40 years. Many thousands of appliances have been produced and installed. Our expertise is used to design and supply hot water requirements:

- across many varied industries and applications
- from 9 litres to 10,000 litres in size
- powered by steam, gas, or electricity



Edson holds national contracts for design and supply of commercial hot water systems for many different applications with some of Australia's leading public companies and government institutions.

Problems with water quality in Australia.

Australia as a whole is experiencing drought like conditions in nearly all States. Water supplies are drying up rapidly and a continual process of sinking more Artesian wells (bores) is occurring steadily as water supplies diminish and more bores are sunk to ensure supply on demand. Metropolitan Perth presently has 26 different sources of water supply, and in other areas of Australia the water sources are so low that very high amounts of sediments and higher concentrates of calcium are being experienced causing many problems. These concerns have grown to such an extent that in Perth a task force has been set up by the plumbing industry to help advise the water board of problems created due to poor quality water and diminishing water supplies. New artesian water supply bores drilled to keep up with water demand are dragging up corrosive & high sediment water which has caused many problems including:

- warranty claims on valve manufacturers due to clogged and corroded valves
- increased plumbing supplies warranty claims for pitted copper tubing and fittings
- warranty claims on hot-water manufacturers due to heating element pitting and the resulting failure
- increased warranty claims on hot-water manufacturers due to calcium encrustation causing premature failure.

Edson's efforts to reduce warranty claims and improve product operational life.

Normally Edson long-life stainless steel hot-water systems do not require anodic protection due to fact the materials used in their construction are not susceptible to pit corrosion and this includes "high alloy 825 Incoloy" heating elements where they are fitted.

However we are finding that many coastal areas of Western Australia and other parts of Australia are now experiencing very heavy calcium scaling. This is coating heating elements and causing them to fail after only a few weeks of operation. Build-up of calcium scale on heating element sheaths is preventing the heat generated by the element from being transferred to surrounding water in the water heating cylinder, which in turn causes premature burnout and complete failure of heating elements.

Actions we took.

- Edson have found it necessary for the past 2-3 years to install sacrificial anodes in all heaters manufactured for WA, or for areas where we know that calcium scaling is now a problem. These are fitted "as standard" and are supplied in all heaters purchased for use in these areas.
- Edson's Installation & Maintenance manual for the MODEL: 650 SSL, states the need to maintain & replace sacrificial anodes as required. It also states how to retro-fit a sacrificial anode into a water heater should an instance arise where the heating element fails prematurely and inspection shows signs of pitting due to attack by minerals in the water supply.

Case History - Continuing failures even with sacrificial anodes installed.

After many premature failures of heating elements in a new commercial hot-water system supplied to Coles Group situated in Australind (Coastal Western Australia) Edson visited the site. We inspected the installation and the heating elements of the water heater and found that the sacrificial anode installed in the water heater was not being attacked at all and the heating elements were failing due to scale build-up. To overcome the problem we recommended that a Model 2034 Halcyan be supplied and installed. Subsequent use has determined that this has overcome the problem.

CONCLUSION

- Due to Western Australia's declining water quality and drawing on our experiences we now recommend that a Halcyan device be installed in all coastal Western Australian locations. These will be supplied by EDSON in the packing crate with Edson water heater and relief valves.
- Edson has proved Halcyan devices to be successful in commercial and domestic installations in the worst quality water areas in Australia. Our distributor in Western Australia has an Edson stainless steel hot water system (fitted with a Halcyan) sited in one of the worst areas for scale build-up. It has been operational for the past 11 years without the need to change the heating element at all during this time.
- Edson will continue to supply anodic protection in all heaters manufactured by us to be installed in Western Australia. Anodic protection has shown to be effective in protecting heating elements against corrosive minerals in the water supply but it will not protect against calcium scale build-up. Halcyan has been proven beneficial for protection of heating elements in EDSON hot water heating systems against scale build-up and also for scale protection of other items such as circulation pumps, valves and other appliances being fed from the supply.

- Edson's experience is that scale build-up on the outer sheaths of the heating elements, (especially from calcium because it is such a good insulator), inhibits the transfer of heat from the outer surface of the element sheath to the water being heated. Extremely high heat then becomes trapped in the magnesium oxide separating the spiral heating element and outer tube of the element sheath causing it to operate at many times higher than the designed operating temperatures.
- Besides causing increased energy consumption and higher operational costs, the extremely high temperature reached is the reason for premature failure of heating elements within weeks and other damage that may be caused to contacts on control thermostats and other components. This is why Edson water heaters require a properly functioning heating element free from scale build up at all times.

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