Laboratory still limescale-free – and no acid attack!

Supplies of distilled water are regular requirement in chemistry laboratories. Many produce it reducing domestic water straight from the tap.

The chemistry lab of the Royal Military College, Shivenham is no exception and uses 10 litre capacity stills which are electrically heated. However, just like many other towns which lie to the south and east of Humber to Severn line, Shrivenham has a hard water supply. Whenever hard water is heated, there is a risk of limescale deposits building up very rapidly.

This was the case for the Shrivenham scientists who regulary dismantled their stills and used acid to clean heavy scale encustration from the glass vessels and electric heating elements. Repeated acid cleaning had also pitted the outer metal surface os each element, effectively reducing its life. It was important to use non-chemical products totreat the hard water, but none Shrivenham had tested worked effectively before. A Hydroflow S-38 unit was recommended.

Being chemist with access to sophisticated equipment, the Shrivenham team decided to carry out some comparative performance tests but using the same still.

Starting from the still in a completely clean condition, observations would be made using a Hydroflow unit over a 6 week period. The still would then be cleaned, re-used for a second 6 week period without Hydroflow and fresh measurements taken. Scanning electron microscope and X-ray diffraction test equipament was available. This confirmed that calcium carbonate crystals form immediately following the super-saturation point of the heated water.

In the case of Hydroflow, crystals were initiated more quickly and grew larger, with the salts crystallising onto these “Hydroflow crystals” rather than onto the glass or electric element. Futher, the water was maintained at saturation point.

Hydroflow completely removed the need for acid cleaning, with the consequence health and safety precautions. The need to dismantle the still was also obviated. The Royal Military College chemists are very grateful to have these repetitive chores removed from their work schedule.

Having passed the tests of demanding military scientists with flying colours, Hydroflow HS34 units have been permanently fitted to all laboratory stills.

HYDROPATH TECHNOLOGY PATENTED

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