



SOLUTIONS

ELECTRONIC FLUID TREATMENT TECHNOLOGY NEWS

ISSUE 3

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Sustainability ...and hard water

The amount of damage caused by hard water is enormous, however advice on how to prevent it is sadly lacking from all the relevant Agencies. Search for the term *water treatment* on The Carbon Trust and/or Energy Savings Trust's website and no guidance is given to businesses, organisations or indeed consumers. Indeed these Organisations hardly recognise there is any problem with hard water or limescale whatsoever.

The Carbon Trust does state that 1mm of limescale causes 7% increase in energy within their **Low Temperature Hot Water Boilers** document (CTV008), but their advice appears to be - *let the problem happen and then annually use chemicals to remove it*. Now that very effective non-chemical methods exist for preventing, indeed removing, limescale, surely this should be the preferred **sustainable solution**.

Of course, energy is only part of the equation. Scaling and chemical treatment methods both cause premature failure of water-fed equipment, appliances and sanitary-ware. Take for example direct-fired gas boilers. These have a very much shortened life in hard water areas. Scale builds up on the bottom surface, above the hottest part, causing the casing to split and emptying the contents on the plant room floor.

"Sustainable development is development that meets the needs of the present without compromising the needs of future generations to meet their own needs."

Brundtland (1987)

The boiler then has to be replaced. This involves mining raw materials somewhere in the world, processing them into components, then assembling and transporting the replacement across the globe. Now multiply this simple example with all the other items requiring premature replacement and plain common sense would conclude that this has an immeasurably massive impact on every aspect of sustainability.

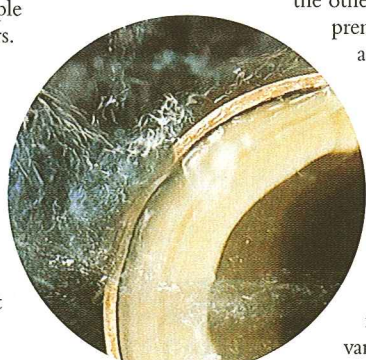
In an effort to influence the various Agencies, ETC is an active member of three key organisations:

"1 in 10 irons sold are returned within 1 year; 65% of these are due to limescale damage"

Chemical Competitor




Thermal expansion has already raised the oceans 4 to 8 inches (10 to 20 cm)

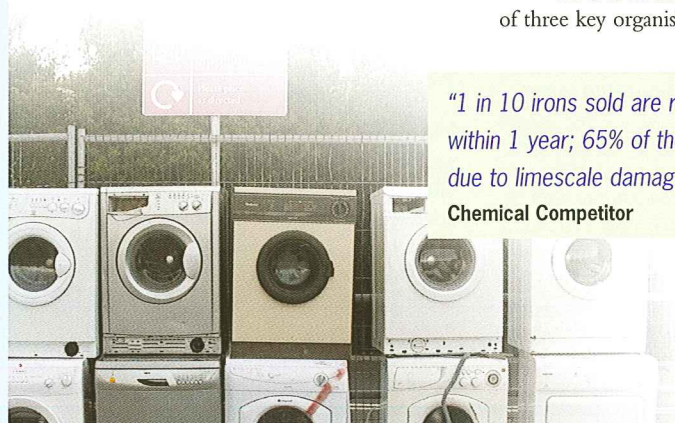


"A 1mm layer of limescale will cause a 7% increase in energy input to the boiler to meet demand"

The Carbon trust

British Water, Environmental Industries Commission and the UK Green Building Council. These are proving to be excellent forums for lobbying Government to achieve recognition of the need to consider water treatment. Some success was achieved in getting a change made to Part L of the Building Regulations.

ETC also offers approved CPDs (Continuing Professional Development) to members of RIBA and CIBSE. This is proving to be an excellent method of getting the message across to those who can influence the adoption of a clean and green way to prevent the many problems caused by limescale. 



CPD Seminars address the key issues

CPD (Continuing Professional Development) the by-word for many - from Central & Local Government to local companies and partnerships - as the means by which to promote and enhance staff skill, expertise and knowledge across the professions.

Designed as a means to promote vocational development and growth with a definite slant towards application in the 'real world', the CPD initiative also effectively serves to help keep Britain at the forefront of delivering robust projects and services via a capable, efficient and confident staff base.

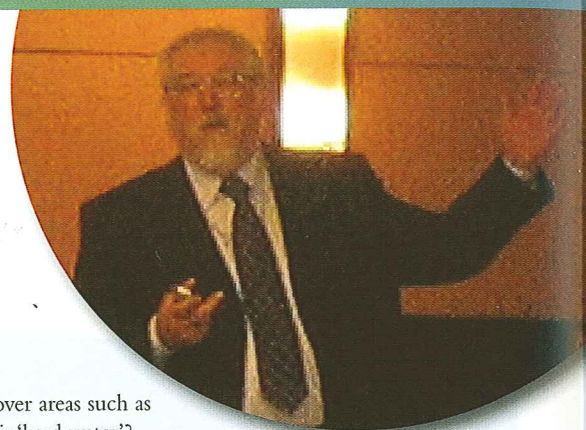
Via its accredited seminars, ETC is proud to be part of this initiative, addressing not only the skills question but also such potent and key issues as **sustainability** and **energy efficiency** - areas which *must* be addressed in view of current environmental and economical predicaments.

To this end, ETC Ltd is delighted to present its own seminar, "Saving

Energy and Water Through Effective Electronic Water Conditioning", accredited via both RIBA (Royal Institute of British Architects) and also more recently CIBSE (Chartered Institution of Building Services Engineers) - leading players in the field of building management and design.

ETC looks forward to sharing its knowledge and experience with those wanting to participate in these valued forums.

Add value to future development within your chosen field of knowledge - enquire via cpd@electronicdescaler.com or simply phone us (01329 836960) for more information. We will be pleased to help! ☒



The Seminars cover areas such as

- what is 'hard water'?
- the problems and consequences of hard water
- chemical water treatment methods
- physical water treatment methods
- typical application sites
- Health & Safety considerations
- case studies



and address the inherent consequences

- damage to water systems and appliances, increasing:
 - maintenance loading
 - equipment downtime
 - lost production
 - capital equipment replacement costs
- energy wastage
 - just 2mm of scale can double the time to re-heat water
 - 0.036 inches (36 thou) of scale in a 500 ton chiller condenser increases annual energy cost by £25,000
- sustainability & environmental issues
 - increased toxic chemical storage and handling problems
 - increased amount of toxic chemicals getting into the environment
 - decreases worldwide stocks of raw materials

A Continuing Relationship

John Lewis



environmental treatment concepts

The John Lewis Partnership, one of the top 10 UK retailers, has maintained its faith in the ETC technology with a rolling program of installations across the country, in both stores and staff facilities..

A number of residential clubs offering subsidised holiday accommodation to Partners with at least three years service are owned by the John Lewis Partnership. Two of these in the south of England, - Brownsea Castle in Poole Harbour, Dorset and the Odney Club in Berkshire - have been fitted with **Scalewatcher™ ENiGMA** units.

Brownsea Castle, also called Branksea Castle, is a mid 16th century square blockhouse built by Henry VIII to guard the entrance to Poole Harbour. It was renovated during the 19th century as an impressive residence but was badly damaged by fire in 1895. Brownsea Island, a haven for wildlife and an

area of exceptional natural beauty, has been the responsibility of the National Trust since 1961 and the castle then leased to the John Lewis Partnership. The 30 bedrooms of the Castle are offered to the Partners at a reduced cost for holidays. ETC have provided units for cottages and the laundries.

The Odney Club in Berkshire is near to the company Winter Hill Golf Club. The club has a conference centre and apartments and cottages. **Scalewatcher™ ENiGMA** units have been installed in the homes of two of the onsite staff as well as the kitchens and conference centre.



Brownsea Castle, Poole Harbour, Dorset

The initial installation at the Waitrose supermarket in Caversham has lead to an ongoing relationship between JLP and ETC as the latter is specified as a provider of water treatment in Waitrose stores across the country, responding sometimes at very short notice, supplying an effective, sustainable, environmentally friendly solution to the problems of hard water. ☒

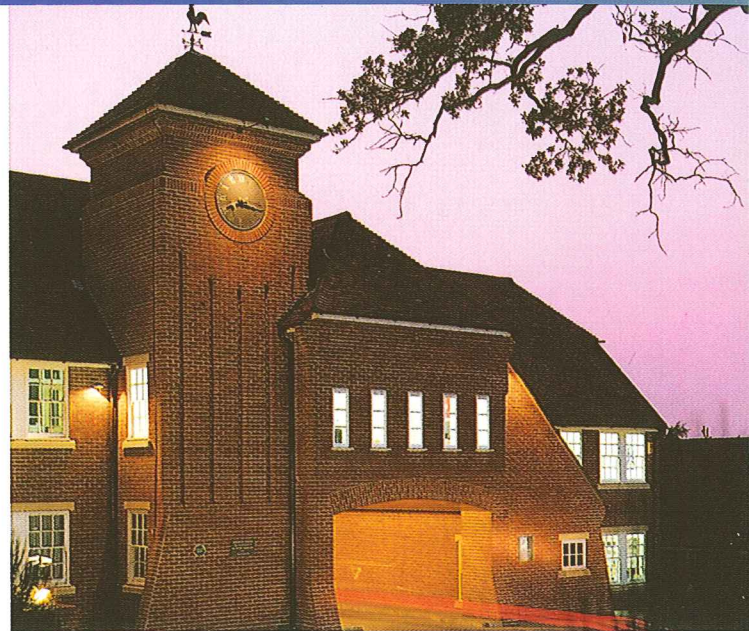


The Odney Club, Berkshire

Moving back – Moving Forward

After nine comfortable years at North Park Business Centre, August 2008 saw ETC return to its spiritual home and take up residence at Funtley Court in Fareham. Naturally this resulted in a few weeks of upheaval, but with the cheerful co-operation and endeavour of staff the new offices were in a workmanlike state within a few days, despite some teething problems with communications.

As the new premises are spread across three floors, as opposed to one, the members of staff are hoping to get fitter as they go about their daily business! The move has facilitated an opportunity for the office space to be reorganised, which currently is proving efficient and successful with all. 📺



The Yala Fund Sri Lanka

It was a holiday at the Yala Safari Lodge Hotel on the beach in November 2003 that first attracted MD John Thompson and his wife Bev (company bean counter) to Sri Lanka. They particularly experienced the warmth and friendliness of the people and their obvious acceptance of high standards of behaviour learnt from the years of British influence. This was clearly demonstrated at the lovely Mount Lavinia Hotel, which had originally been the Residence of the British Governor of Ceylon, Sir Thomas Maitland.

John and Bev befriended their safari jeep driver, Kalu, during a number of trips into Yala National Park in a quest to see the unique and shy Sri Lankan leopards. They stayed in touch on their return to the UK, – then came the Boxing Day Tsunami!

They just felt they had to try and find out what had happened to Kalu. Using the internet for information, their paths crossed with The Times business features editor Jon Ashworth, seeking info about the region as he had booked a holiday prior to the disaster.

The yala website at www.yala.org.uk

Bev asked Jon to look up Kalu whilst he was there in Feb 2005. This led to Kalu taking Jon to a devastated fishing village in Kirinda, Tissamaharama, where the villagers were now living in emergency accommodation. Although they had shelter, there was nowhere to sit, or for the children to do their homework. This prompted Jon to try to help, so he went to the nearest town and bought a number of plastic garden tables and chairs and shoes for some of the children to wear to school.

On his return to the UK he realised that his destiny was to help these gentle people, so he resigned his position at The Times after 17 years and set up a registered charity, Yala Fund and asked John and Bev to become Trustees.

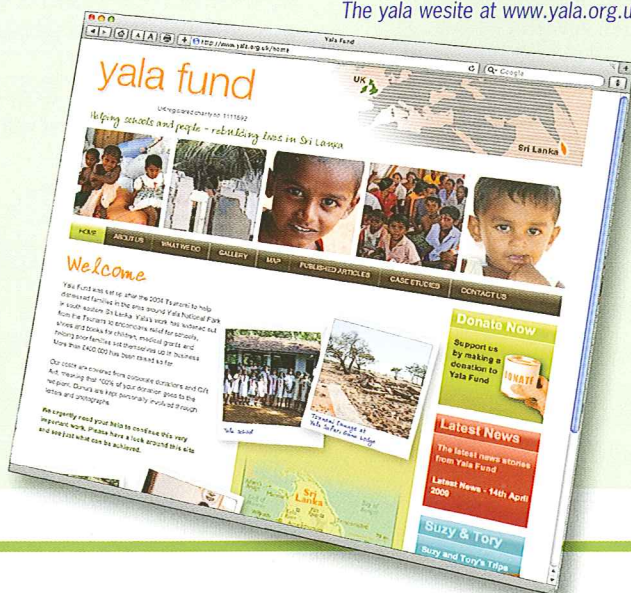
Four years and 15 visits later Jon has raised more than £300,000 and has really made a difference in many areas of this beautiful, but extremely poor island. Jon soon found that the larger NGOs had not managed to identify the really needy people, those that lived inland. Many had lost parents who were visiting markets on the coast when the tsunami hit and were now left with no way to rebuild their shattered lives.

Concentrating mainly on poor schools it was felt that the fund would have a greater impact on both the children and their parents. Repairing the schools, providing uniforms, shoes, books and even daily rations of food, none of which the Government provides, takes the burden off the parents and gives the children a better chance of a decent education.

The central philosophy of the charity, again nothing like the NGOs, is to spend as much as possible in the locality and to feed back to donors just where their hard-earned cash had been spent.

In addition to helping Sri Lankans, Jon has made two trips to the region with children and teachers from the Harris Academy, Bermondsey, generously funded by the Worshipful Company of Chartered Accountants, giving students from a relatively poor background in the UK a life-changing insight into just how lucky they actually are compared to many others on this planet.

ETC would like to give a massive thank-you to all their staff, suppliers, and associates, who have given so generously to the Yala Fund. 📺



Hot water flows freely again at Chilworth Manor Hotel

Chilworth Manor Hotel, an Edwardian Manor House set in 12 acres of landscaped gardens, is located in central Hampshire in the middle of southern England's hard water area. The setting plus dedicated conference and training facilities make it a popular venue for team building events, fun days, fund raising events, product launches and corporate hospitality.

Following many years dealing with the hard water and limescale problems associated with the hotel's gas fired hot water heaters, Stephen Axton, Maintenance Manager at Chilworth Manor Hotel, contacted Jan Rowles, one of the applications engineers at Environmental Treatment Concepts Ltd. A site survey and period of consultation resulted in the formation of an action plan to provide a quick and effective solution to the lime scale problems at the hotel.

Within a short period of time the installed **Scalewatcher™ ENiGMA** units, fitted to treat the cold water services to the gas fired water heaters and the secondary recirc return, provided evidence suggesting improved hot water circulation at the premises. When the water heaters were opened, as part of the hotel's routine maintenance policy, it was found that the surfaces of the tubes within the hot water heaters were no longer coated with hard lime



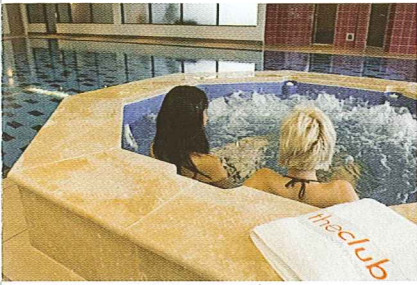
scale deposits, instead there was just a soft powdery sludge that was easily flushed away.

To the delight of the on site maintenance team, the time consuming and expensive planned maintenance costs and the risk of break downs have been considerably reduced or eliminated due to the technology of Environmental Treatment Concepts Ltd.

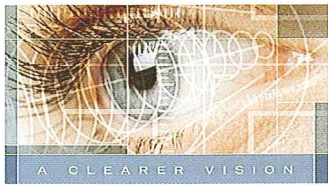
The descaler units fitted have particularly impressed Stephen Axton, Maintenance Manager at Chilworth Manor:

"I am very pleased with the results achieved and will highly recommend this product to companies and maintenance peers who suffer similar scaling problems. I would encourage Maintenance Managers to contact ETC Ltd in assisting with any of their water treatment problems."

As for the future, with Chilworth Manor Hotel's newly opened £3 million leisure club, ETC Ltd are currently planning a comprehensive support package in assisting the leisure club with all of its water treatment maintenance programme. 



Clear sighted decisions for CooperVision (UK)



The registered office of Coopervision (UK) is to be found in Fareham, Hampshire, an area noted for its hard water. A contact lens pioneer for decades, CooperVision has become the second largest contact lens maker in the world and the number one manufacturer of toric lenses.


From their network of facilities in 12 countries across five continents, CooperVision distributes high-quality lenses virtually everywhere contact lenses are worn, with a special focus on premium speciality lenses.

Since 2001, ETC units had been fitted to the humidifiers in the company building, with great success. In 2007 a different scaling issue presented itself in the four autoclaves, which produced steam, resulting in extra maintenance as the autoclaves needed to be stripped down and cleaned every four to six weeks. As the company operates continuous manufacturing, producing thousands of contact lenses daily, this naturally affected productivity.

In early December 2007 Mark Potter of Coopervision was referred to ETC. After consultation, and with knowledge of the success of the humidifier treatment, **Scalewatcher™ ENiGMA** units were fitted to the autoclaves. By January 2008 a significant change had been noticed and by February it was confirmed that the loss of productivity was greatly reduced and less maintenance was required. A 750ml water sample was taken from the steam generator prior to the fitting of the **Scalewatcher™ ENiGMA** unit and then again six weeks later. A vast improvement was clearly seen in the reduction of scale in the beakers after evaporating the sample.



Minerals in steam carry over before (top)... and after (above) treatment

Mark Potter was "amazed and pleased" at the efficacy and efficiency of the treatment and the ensuing increased productivity. 

Research & Development

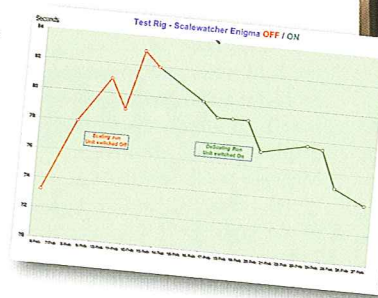
In 20 years of pioneering electronic water conditioning, ETC has developed a number of methods of demonstrating the efficacy of their patented technology, however despite an overwhelming amount of evidence many people remain totally sceptical. This remains the case, even though electron-microscope scanning carried out at the University of Hull conclusively confirmed that the coil causes calcium to be precipitated in the bulk of the water and not on a surface.

Attempts at formal testing have been made, but nobody appeared to be capable of designing a test that could be used to demonstrate just what electronic conditioning is capable of, without taking months, using many thousands of litres of water, a great deal of energy and many hours of an operative's time monitoring, recording and analysing the data.

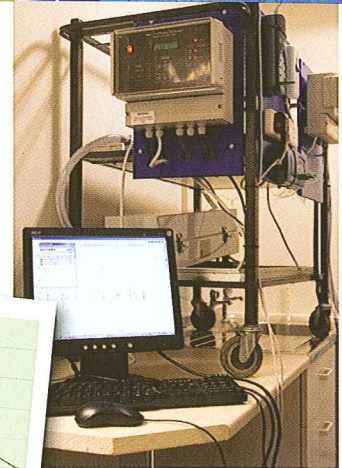
ETC decided to bite the bullet and perfect its own test rig that

would use minimal amounts of water and power and give results in just a few weeks. The objective would be to hone the operation of the rig so that constant and repeatable results could be obtained.


The result - a test rig that is capable of creating significant scale in just a few weeks and also able to prove that the electronic descaler is capable of removing that scale over a similar period, using minimal water, energy and time.



Using a circular electric heater clamped around a 15mm copper tube, water is heated by maintaining the pipe wall temperature at 85^o C. The water is kept in the tube for a fixed time to heat water to 60^o C then replaced with fresh water. By measuring the time to heat the water from 20 to 60^o C it is possible to show that

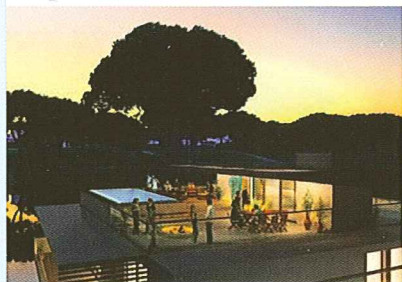


significant scale is formed inside the pipe (increasing the heat-up time) and that scale is then removed when the coil is turned on (reducing heat-up time).

Once clear evidence of repeatability can be demonstrated the rig will be handed over to an independent organisation for an unbiased assessment of the descaling technology. 

Going green in the Algarve

Based in the Algarve town of Estói, Portugal, TÁI - Ibérica, Lda was formed in 2006 by brothers David and Ian Kelly to market the **Scalewatcher™ ENiGMA** range of products and to provide permanent solutions to the severe scaling problems encountered across the country.



Working closely with the British Embassy in Lisbon and UKTI (UK Trade & Investment), and backed by professional performance monitoring, TÁI have established a strong reputation in energy saving for their clients who include hotels, construction companies,

cement manufacturers, mining companies and the British Embassy itself.

One of the largest contracts for TÁI so far is "The Keys" in the spectacular Quinta do Lago, one of the world's most sought-after luxury resorts set in nearly 2000 acres of Portugal's Algarve. Here, **Scalewatcher™ ENiGMA** systems have been specified for around 250 properties. With building work due to start this year, "The Keys" will add a new and exciting dimension to Quinta do Lago. Like their Florida namesakes, Key Lago, Key Pointe and Key Verde will straddle the landscape like a chain of islands

Leading The Keys development is international property investment company, E3 Property. Their chosen partner for the very best in environmental technologies and swimming pools is the Enova Group based in Lagos who have




incorporated into the project the very latest in renewable energy and energy efficient systems.

Just some of the features of these spectacular properties include private roof top pools and sky gardens in most properties, waterfall and steam showers, firepits and rooftop snugs and hidden underground parking and roads.

With the emphasis very much on an environmental approach to building, and with the water of Quinta do Lago being notoriously hard, the Enova Group has asked TÁI - Ibérica, Lda to install

Scalewatcher™ ENiGMA Digital Electronic Water Descaler units to protect both hot and cold water systems.

Replacement of pipes and hot water tanks of this specification is very costly in the Algarve and, as such, Enova intend that their clients experience a smooth and trouble free lifestyle. Enovagroup's Technical Director, Colin Reid says "We decided to recommend the **Scalewatcher™ ENiGMA** systems because we needed a compact and reliable solution for water treatment with minimal maintenance and a proven track record in the industry". 



Effective Solution for Southern Water Struvite problem

East Worthing Treatment Works has been suffering from struvite build up in system pipework, causing major problems within the digestion process. This has not only impacted on the business financially, but carried a high level of risk to compliance. The impact has been no centrifuges running to produce sludge cake and intern odours (*sic*) created from sludge holding tanks, which had a detrimental effect on local residents.

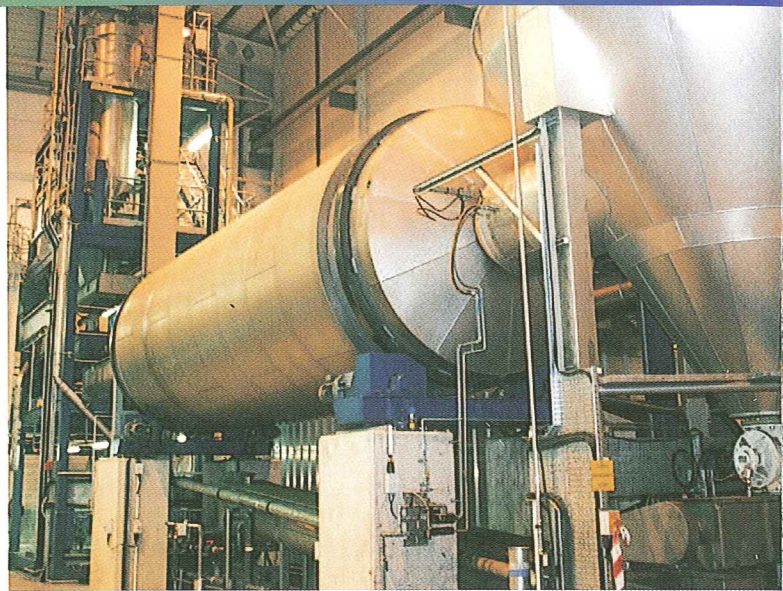


Glen Stock from Southern Water

This has meant Southern Water Mechanical Technicians spending on average 20hrs a week using mechanical aids to chip away scale from pump bowl and impellers, resulting in reduced running time of the plant.

A short term solution was introduced which involved dosing with chemicals; this began to emulsify the scale enabling the digestion process to be restarted and compliance maintained, but this was financially expensive and not economical over a prolonged period. Southern Water staff felt sure there had to be another, more successful, cost effective method available.

Research online and exploring the experiences of other companies steered Glen Stock, Southern Water Area Process Initiatives Manager, towards Environmental Treatment Concepts Limited.



Following an initial meeting he felt confident about what he had seen and heard, and deciding he had nothing to lose, as using chemical treatment was estimated to be costing £4k - £6k a month, he decided to install **Scalewatcher™ ENiGMA** units.

Commissioned at a price of £12k, the equipment has now been running for six months to date with no apparent problems with either pumps blocking or process issues. The total saving for Southern Water at this site is estimated around £100k per year.

Glen is very pleased with the level

of service given and the results to date: "A simple solution has been provided by **Scalewatcher™ ENiGMA** making savings for our company whilst reducing a heavy maintenance load / labour costs and in the process improving working efficiency. As a company we are thrilled with the results."

During current ongoing consultations with staff from ETC, Glen is now exploring using this patented technology on other fluid systems that could save Southern Water further time and money, whilst improving operational and equipment efficiency. ☺

That Eureka Moment!! Now we have independent evidence of effectiveness

Since first introducing the world to SWE in 1989, ETC has searched for a method of measuring or demonstrating the ability to actually change the condition of water. Many chemical tests, carried out by a number of different institutions and organisations, have never detected a change in treated water, with the exception of a tiny increase in CO₂, found by Portsmouth Water and Portsmouth University.

ETC has always considered the theory of operation to be that varying frequencies, applied by the technology, caused the precipitation of calcium, which was borne out by the CO₂ increase, post treatment, and observations from treated systems in the field.

However, thanks to a long term association with the University of

Hull's Department for Chemistry in Industry, managed by Ian Dobson, clear evidence has now been produced to support this theory.

Taking a sample of soft calcium deposits from the bottom of one of the many MOD accommodation block calorifiers currently being treated and observing it with an SEM (scanning electron microscope), clearly showed a

massive difference between untreated water's precipitated calcium and calcium crystals formed within treated water.

Commenting on the resulting photographs, Ian commented, "This is the first time I have seen visible evidence that **Scalewatcher™ ENiGMA** has made a change to water. What you have in your treated-water images is fine rod



Precipitated calcium -
Untreated (left) and treated (right)

like crystal that have formed in 'free space' ie not at surfaces as ordinary limescale does. So instead of forming on surfaces it has formed in the bulk of the water and will be mobile in a flowing system."

The conclusion of the SEM comparisons clearly explains why SWE treated water is able to prevent hard scale formation ☺



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