

# The Watermark

The Newsletter From

**Automated Water & Effluent Ltd**

Winter 2010/11

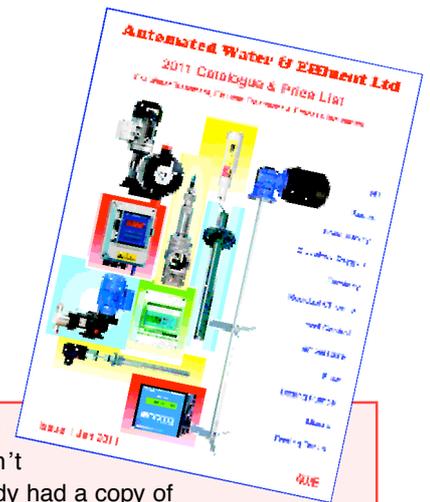
## 2011 CATALOGUE NOW OUT

To all our customers we are pleased to present our 2011 catalogue, which will be ready for distribution by email during Jan and as a printed catalogue to follow shortly. The email version now has a red lettering on a white background for faster downloading and easier printing. New items include ready made up liquid calibration solutions including pH buffers 4,7,9 and 10 pH. Redox standard solution of 650 millivolts at a new more economic price and conductivity calibration solutions. We have increased our stock on the 7635 and 7335 instrument ranges to be able to offer improved deliveries. Our new pH and Redox electrodes, the 8000 series are high performance

electrodes for either immersion or insertion into your process liquid and feature chemically resistant bodies in kynar (PVDF) and double junction references.

An improved range of peristaltic pumps which include both a mains and a battery powered drain doser. The BWP 120 which is a big wheel peristaltic pump capable of dosing 2 litres per minute (120l/Hr) with a selectable output of 30k, 60, 90 or 120 l/Hr by internal jumper.

Remember, if you need an electronic solenoid dosing pump just call us we have a large stock ready for immediate delivery, we are just a phone call away.



If you haven't already had a copy of our new catalogue, or would like a colleague to receive one, then please contact Mrs. Vera Young by telephone **01785 254597**. or e-mail [vyoung@awe-ltd.co.uk](mailto:vyoung@awe-ltd.co.uk).

## Conductivity Tester That Floats

To complement our stick pH tester (see The Watermark summer 2010) we also have available from stock a conductivity stick.

Part No. EC Testr 11 waterproof portable conductivity  $\mu$ S tester compact, economical and easy to use, with 2 selectable ranges 0- 2000 $\mu$ S and 0 - 20.00mS both with automatic temperature compensation.

The benefits of our stick conductivity tester meter are ease of use, economical to purchase and most of the entire unit is completely waterproof it even floats!

We are also able to supply portable conductivity meter kits in carrying cases with dip or flow through cells, just call our sales hot line 01785 – 254597 with your requirements.



## Hello From Gill



New to our team is Gill Robinson who started with us on the 1 of December 2010 in our Sales and Marketing department. Gill is single and has 2 grown up children and two grandchildren. Her hobbies include league darts, dancing, crafts and DIY and she is currently working on a family project of refurbishing an old farmhouse in Bulgaria.

# Technical Tips

## pH Buffering

After many years in any industry it is very easy to take it for granted that everyone else has been around for a similar time and is as experienced as we are.

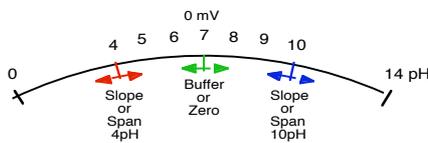
I was with a customer a few weeks ago who has several pH control loops on his site so assumed he was familiar with pH instrumentation as he had just purchased some portables to check the chemistry in a new processing machine. On examining his new portable pH meter supplied in a carrying case with electrode, stainless steel temp probe and 4, 7 and 9 pH buffer solutions his next question was "what is this buffering"? A good question if you are new to pH measurement.

Buffering is calibrating the meter and electrode against a known pH standard, pH electrodes and many other electrochemical sensors need to be regularly calibrated to ensure they provide accurate measurements of the solutions under test.

The accuracy of any pH system depends upon taking care of your pH electrode system, don't just fit it and forget it. It's not like a temperature sensor, pH electrodes need to be kept clean and calibrated regularly against buffers, pH solutions of precise pH values which are stable over varying temperature ranges.

There is a myth that all you need to do is take a sample measurement with a portable pH meter or pH paper and adjust the controller or transmitter to read that pH value. This is like setting a stopped clock to the present time, its only correct at that point in time and the same goes for your pH electrode. How do you know it will respond to a change in the pH of the solution being measured?

### pH Calibration



Set 7pH with the Buffer or Zero adjustment

Set 4 pH with the Slope or Span adjustment if Acid pH values

Set 10 pH with the Slope or Span if Alkali pH values

Instrument should be able to display both acid and alkali pH values after calibration.

It must be first calibrated against a 7pH buffer solution, which with most electrodes is zero output or  $E_0$ , the

point where the electrode produces zero millivolts. That means the electrode produces zero millivolts at 7 pH. However with electrochemical sensors that can vary slightly with manufacture and will change over the life of the electrode depending on the solution the electrode is used to measure and the temperature and pressure the electrode is subjected to.

So as the millivolts produced at 7 pH can vary we need some adjustment to compensate for this varying value hence the buffer or zero adjustment on your pH instrument. For accurate pH measurement and control the calibration needs to be carried out at a minimum of two points. If you are working on acidic solutions use 7 and 4 pH buffers, if you are working on alkaline solutions use 7 and 9 or 10 pH buffers.

This adjustment is usually achieved by using the slope or span control on your pH instrument so you have made the instrument correspond to two points on the pH scale. It is good practice to check the electrode in a third buffer solution, IE use a 10 pH buffer if you have calibrated to 7 and 4 pH and use a 4 pH if you have calibrated to 7 and 10 pH. The instrument should display the value of the third buffer.

### How To Buffer an Electrode

We are assuming an on line pH control system with the electrode either immersed into an open vessel or installed in a pipe line you are measuring.

Wear the relevant safety gear for working with chemical solutions adhere to all relevant health and safety regulations appertaining to the industry and country you are working in.

Isolate any item the pH loop may be controlling such as dosing pumps or valves, any divert systems or alarms, including alarms connected to BMS systems, which may operate remote alarms off site.

If the electrode is in a tank ensure it is safe to remove the electrode, if the electrode is in a pipe isolating the line and drain out any liquid before carefully removing the electrode.

Examine the electrode for any damage and clean the electrode as per the manufacturers instructions. Ensure the glass bulb is bright and clean with no

deposits or traces of fats or grease on the glass bulb. Wash the electrode with demin water and place in the 7 pH buffer solution, adjust the instrument to read 7.00 pH as per the manufacturers instructions. Some instruments have auto buffer recognition to help you. Remove the electrode and wash off with demin water and place the electrode in the second buffer usually either 4 or 9 (10) pH, adjust the instrument to read the second buffer as per the manufacturers instructions.

Wash off the electrode with demin water and place in the third buffer as a check to see the electrode responds to both rising and falling pH values.

The electrode may now be replaced back into the process, if in a pipe check to ensure there is a leak proof seal and remember to reset any controls or alarms which were disabled.

Where the manufacturers



recommendations differ from our suggestions follow the manufacturers recommendations as there may be variations on the procedure with different manufacturers.

If you wish to carry out this yourself we are able to supply buffer solutions from stock with values of 4, 7, 9, and 10 pH, either as ready made up liquids or as powders making up 500 mls of solution when dissolved in demin water.

If you are not confident at carrying out



the calibration yourself we offer routine servicing and calibration of pH instrumentation by our team of mobile service engineers.

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