



Regeneration of ASTI pH & ORP Sensors beyond their shelf-life period or for units that have been left dry for an extended period of time

Procedure to restore “aged” ASTI pH and ORP sensors that have been stored correctly with their caps on, but beyond the “Shelf Life” of 12 months or else left without the cap on for an extended period of time.

The following procedure is approximately 90% successful for most sensor types where the 12 month shelf-life was exceeded with protective cap in place and is based on a standard “Bench Test” over the buffer range of pH 7.00 (0mv) & pH 4.00 (+177mV).

The procedure has the ability to achieve a “mV response” from a probe for a performance of better than 90% of ideal (59.16mV per pH unit at 25 degrees Celsius).

Example: A pH reading at 7 is -8mV ; pH reading at 4 is -159mV. Thus “total measured” is 167mv.

Response = { -8mv – (-159mv) } / 177 x 100 = 167/177x100 = 94%.

Response is = Total Probe span (mV) / Theoretical Span (mV) x 100 = %.

PROCEDURE:

1. Remove the black caps and store for future “re-use” once these sensors have been reconditioned.
2. Soak the probes in a bucket of water for a minimum of one week, ensure the water level is covering 90% of the length of the probe, the level should be below where cable enters the backend. This ensures a positive pressure of water on the tip to force the hydration of the reference.
3. Ensure all cables are “cable tied” to avoid tangles and confusion during handling.
4. Remove after 7-8 days and scrub the glass tip for 30 seconds with Bon Ami paste “abrasive powder” using a toothbrush. Rinse the tip with (20%) HCl acid for 30 seconds then wash and rinse away excess acid with water.
5. Place the probes in saturated KCl solution for 2-3 days (depth of the solution to 1” is sufficient).
6. Remove from KCl solution , rinse with deionized (DI) water, and scrub the tips for 15 secs with a toothbrush dipped in Iso-Propyl Alcohol (IPA), rinse well with demineralized or deionized water (optional procedure).
7. Replace all the black plastic caps to the probes with a “Storing Solution” comprising of a 50/50 mixture of pH 4 buffer & saturated KCl solution to ensure that they don’t dry out while bench testing the other probes or as a result of work commitment time delays .
8. Bench test the probes in pH 7.00 (0mV) and pH 4.00 (+177mV) to determine the “response” of each probe.
9. Response = “Total Measured” mV Span of the probe, divided by actual range (174mv) x 100 = % Response. We would expect >90% to be returned to classed as a successful “Restore”.
10. Ensure the tested & successful probes are correctly tagged & stored “tip down “ in a vertical position, caps filled with “Storing Solution” and well sealed or taped with Plumbers Teflon Sealing tape.
11. Once tagged these probes should be put into service as soon as possible.