

IESL TECHNICAL BULLETIN

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This is yet another bulletin to share a valuable tip / experience with all of you regarding **“pH measurement of ULTRA /HIGH purity water”**.

In our country D M plants have final polishing units like MBs to produce high purity water with a conductivity of 0.5 to 1.0 $\mu\text{S}/\text{cm}$.

Indion Duo Rapide+ models (Elga+) give very high purity water. Such waters have very few ions and do not conduct electricity easily. This makes it difficult to measure the conductivity of such waters, hence the resistivity of such waters is measured. Such waters cause problems of accurate pH measurement. For such waters pH measurement requires a special electrode and flow cell assembly.

Extremely low levels of ions present in such water affects the accuracy of pH measurement, further, pH of such high purity must be measured “online” and not “offline” by taking a sample in a beaker or bottle for measurement in a Laboratory.

Water of such high purity very quickly absorbs atmospheric gases that it comes into contact with it. Carbon dioxide (CO_2) is the gas, most commonly present in the atmosphere is absorbed in water instantly, resulting in drop in pH.

Taking a sample and testing it in the Laboratory using a tabletop type pH instrument, even if it's a matter of couple of minutes from time of sampling to measurement, pH drops below neutral levels.

Since most plant users do not understand or accept this explanation from us it is better to demonstrate it.

- a) Take a sample of water in beaker from plant and measure the pH of sample water with normal Laboratory type pH instrument. Record the pH.
- b) Take instrument used for measuring the pH to the plant, let the water flow from treated water outlet sample valve into a beaker and overflow on continuous basis. Put the pH electrode in to this beaker and measure pH. It will be more or less value specified by the manufacturer of the plant.

INDION instruments from IEL Hosur have a special electrode with a flow cell specifically for pH measurement of MB outlet waters and other high purity system. You must ensure that if the client who has problem with pH has such

system on his plant otherwise ensure that a suitable pH electrode with flow cell is purchased to replace the old one.

There are many cases where complaints regarding pH results in stoppage of payments by customer. Hopefully this bulletin will help all of us to solve such problems.

Kudos to **Mr. S. S. Ranganathan** for his inputs to publish this bulletin. We are forwarding this bulletin to IEI Technology so that they can make a standard note of it along with Plant.

Prepared By
Pramod P. Kumbhar
Corporate Technical Services
Bangalore