ISSUE
5/08

TECHNOLOGY NEWS
FOR PROCESS
LIQUID ANALYSIS

ECD Tech

this issue

FAQ's

What is ORP?

ORP stands for Oxidation Reduction Potential. ORP is a measure of the electrical potential generated by a chemical reaction that involves an electron exchange. In other words, it is a measure of a solution's ability to donate or accept electrons (e.g. whether the solution is electron rich or poor). Electron rich solutions are reducing agents such as: cyanide, sulfide, and thiosulfate. Electron poor solutions are oxidizing agents such as: chlorine, permanganate and ozone. ORP is non-selective for chemicals and cannot quantify, for example, the presence of chlorine or ozone, but only the combined oxidizing potential. The unit of measure for ORP is milliVolts, typically -1000 to +1000 mV Range.

Need Free Chlorine Measurement?

New Product Release FCA-22 Free Chlorine Analyzer

The FCA-22 is a panel mounted, ready to use Free Chlorine Analyzer. It is designed to **monitor free chlorine in drinking water, rinse water, cooling water or other fresh water samples** from 0.05 – 20 ppm Cl2. The FCA-22 features a plug and play design that incorporates a flow control device, a pH sensor, a chlorine sensor and the C22 analyzer/controller conveniently mounted on a PVC panel. Connect the sample and drain lines, connect the power and outputs and it is ready to use. Calibration is accomplished by DPD comparison.

Free chlorine exists in solution as a pH dependent ratio of hypochlorous acid (~100% at pH 5) and hypochlorite ion (~100% at pH 10). The Free Chlorine Sensor measures only the hypochlorous acid component of the free chlorine and the analyzer calculates the balance using either the measured pH or a user defined fixed value. The use of the pH sensor provides accurate compensation for samples between pH 6 and pH 9.5 and eliminates the need for an expensive sample conditioning system to control the pH of the solution.

The C22 allows either parameter to be graphically displayed with user defined ranges allowing easy trend analysis.

Amperometric chlorine sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A "Constant head" Flow control Device (CFD) maintains the optimum flow by the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

ELECTRO-CHEMICAL DEVICES
www.ecdi.com

ECD Application - Sulfur Dioxide Scrubbers

Article by : Jerry Berger, Western Regional Sales Manager

A wet scrubber is used to remove pollutants and particulates from a polluted gas stream. The pollutants are removed from the gas stream through contact with a scrubbing liquid. The scrubbing liquid is recalculated through the tower to capture the particulate matter and absorb the pollutants in the gas. pH control is important to ensure that the scrubbing solution remains in the caustic range. If the pH gets to low the acidic sulfur dioxide gas is not absorbed. The results of the low pH are corrosion and possible release of SO2 into the environment. Wet scrubbers are only one method of sulfur removal. Most removal and recovery methods require pH measurement. Sour water and sour gas applications abound at refineries and natural gas plants. Hydro-desulfurization, at refineries, captures the sulfides from the petroleum

products in water and it must be controlled at the proper pH. Sulfur is present in many processes and this solution applies to most of them.

Difficulties with the application:

The primary issue is contamination of the silver silver chloride wire in the reference half cell of the pH electrode. Once the silver silver chloride wire is contaminated the customer will observe an offset in the pH reading requiring replacement of the pH element. Other issues are coating and breakage of the glass.

ECD solves the problems: The unique design of the ECD 2005130 sulfide resistant pH electrode answers these problems. The sensor incorporates an innovative reference junction, state of the art Gel technology, and proprietary reference fill solutions which facilitate an unprecedented life in this rough application. The reference electrolyte used slows the rate of sulfide contamination while the junctions are manufactured from Teflon with a smooth surface that resists fouling and easily cleaned. The use of an internal preamplifier allows a noise free signal when using a higher impedance thick rugged glass bulb. A SST sensor housing provides the strength and assists in shielding the signal. All these features combine for a trouble free application.

Products for Hazardous Locations

T28 Transmitter Suitable For Hazardous Environments

The highly intelligent Model T28 Transmitter designed for ECD's analytical instrumentation product line has received FM and CSA approvals. These approvals allow the Model T28 to be used in hazardous locations where combustible gases and vapors are potentially present and represent a safety hazard .

ECD's Model T28 Transmitter is a microprocessor-based, two-wire design that is intrinsically safe, explosion-proof and easy to use. The electronics meet the requirements of FM Class I, II and III, Div 1, Groups A-G, making it suitable for application in a wide range of hazardous industries, including chemical, petrochemical, pharmaceuticals, and others.

The Model T28 in combination with ECD's popular universal S10 and S17 sensors represents a powerful analytical instrumentation system for the measurement of pH, ORP, specific Ion (pION), dissolved oxygen, conductivity or resistivity. The T28 features versatile digital display with a 24-character supertwist alphanumeric LCD screen that displays operational and diagnostic menus. The LCD module can be rotated to accommodate viewing angles in a variety of installation mounting orientations. Contrast is adjustable for differing ambient light conditions. The main menu displays the process identification, variables (in engineering units), percent output and temperature. ECD's T28 transmitter is enclosed in a 300 series stainless steel housing that meets NEMA 7 requirements for rugged outdoor operating conditions. The enclosure incorporates sealed and isolated wiring and electronics compartments. A universal style mounting bracket allows for easy wall or pipe mounting.

Calibration and parameter selections are simply performed using a magnetic screwdriver accessed through the front viewing window. This approach eliminates the need to declassify the hazardous area during routine maintenance.

The 24 VDC loop powered Model T28 transmitter sends an isolated 4-20 mA current signal to a DCS, PLC, controller or recorder.

ELECTRO-CHEMICAL DEVICES

23665 Via Del Rio
Yorba Linda, CA 92887

+1-714-692-1333
+1-800-729-1333
Fax +1-714-692-1222

www.ECDI.com
sales@ecdi.com

T28 Transmitter Suitable For Hazardous Environments