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TECHNOLOGY NEWS
FOR PROCESS
LIQUID ANALYSIS

ECD Tech

this issue

FAQ's

Why use a Toroidal Conductivity Sensor?

There are two basic types of conductivity sensors, contacting conductivity sensors and non-contacting, Toroidal style sensors. The contacting sensor has two or more metallic electrodes in the solution. When a voltage is applied across the electrodes, ions in the solution allow electrons to flow between the electrodes. The conductivity is proportional to the amount of dissolved ions in the solution. Metallic electrodes can become coated or corroded in concentrated or dirty solutions changing the response and generating an error.

Toroidal Sensors use induction through the solution to couple two Toroidal magnets inside the sensor, one a drive torus and the other a receiver. There are no metal parts in contact with the solution so coating and corrosion problems are greatly minimized. Inductive measurement works best at higher conductivity values in coating or corrosive solutions where Contacting conductivity works better in lower conductivity sample that are less chemically aggressive.

New Release-
Model 61 Boiler Blowdown System

Plug-And-Play Automated Blowdown System Improves Boiler Operational Efficiency to Cut Cost

With an intelligent controller design featuring PID output, the Model 61 Boiler Blowdown System modulates the blowdown control valve to allow the maximum level of dissolved solids regardless of load conditions for greater maintenance efficiency at lower cost.

During routine boiler operation, dissolved solids become concentrated in the tank water. As the solids increase in concentration, they may cause damage to piping, steam traps and other process equipment. Sludge also can form in the boiler, which impairs its operational efficiency by reducing its heat transfer capabilities.

To avoid these problems, the boiler water must be periodically sampled, tested and then discharged or blown down with either automated equipment, such as the Model 61 BBS, or by manual techniques. The boiler is replenished with fresh feedwater commensurate with the blowdown rate. Conductivity (TDS) sensors are utilized to determine when the boiler water must be replaced.

The Model 61 BBS is a rack-mount, plug-and-play system, which is easy to set-up, simple to operate and provides cost-savings over manual practices. The modular design of the BBS includes a 316 stainless steel sediment trap and sample cooler, temperature gauge, sample control valve and safety relief valve.

The Model 61 BBS sample conditioner reduces water temperature prior to sample measurement. By cooling the sample, the accuracy of the conductivity (TDS) measurement improves. The conductivity measurement is made with the controller or optional two-wire transmitters (ECD's Model T23 or T28) and the ECD Model CS10 conductivity sensor, which features a 316 stainless steel sensor body and integral preamplifier.

The Model 61 BBS features ECD's Model C22 Controller. The C22 includes an easy-to-read local display and XY graphical plot capability. It is a line powered instrument with PID control functions, logic functions and timers. The standard Model 61 is supplied with one 4-20 mA output and two alarm relays. Up to 4 outputs and 8 relays are available as an additional option.

The C22 Controller's 4-20 mA output can be configured as a PID control output. The proportional/integral signal is assigned to modulate the control valve to keep the surface blowdown rate uniformly close to the maximum allowable dissolved solids level, regardless of load conditions. This automated approach to blowdown lowers the operating costs of the boiler when compared to manual blowdown techniques by minimizing the blowdown rate, which lowers fuel consumption and make-up water consumption.

The C22's timers also can be configured to periodically trigger a relay for bottom blowdown, which may only be needed on a weekly or monthly basis. The Model 61 BBS also can be connected directly to a distributed control system or programmable logic controller via the Model T23 or T28, 4-20 mA, two wire transmitters.

The standard conductivity (TDS) range of the Model 61 BBS CS10 sensor is 0 to 10,000 µS. It operates over a temperature range from 0 to 100°C under pressures from 0 to 75 psig.

ELECTRO-CHEMICAL DEVICES
www.ecdi.com

New Plug-n-Play TCA-22 Total Chlorine Analyzer

Eliminates pH Sampling Systems & Reagents

The measurement and control of Total Chlorine has never been easier or more economical than with the new TCA-22 Analyzer System, which features built-in pH compensation in a virtually plug-and-play design that make it ready to go right out of the box.

The Model TCA-22 is a Total Chlorine Analyzer, which is designed for use in drinking water, industrial cooling and rinse water, wastewater or other fresh water samples containing chlorine in the range of 0-20 ppm. It is ideal for application in municipal water systems and a wide range of water-based processes in the chemical, electronics, electric power, food/beverage, oil/gas, pharmaceutical, pulp/paper and many other industries.

The TCA-22's advanced total chlorine amperometric sensor features a built-in pH sensor that automatically compensates for samples with a 4 to 12 pH concentration. This capability eliminates the need for expensive sample conditioning systems with consumable reagents to control the pH level in the solution. There's also no maintenance labor required to monitor and replace the reagents.

The TCA-22's amperometric sensor is a three electrode design, which measures all chlorine species in the water, combined chlorine and free chlorine. The sensor is constructed with one gold cathode, one silver halide anode and a 304 stainless steel counter electrode. The counter electrode provides a stable base potential that minimizes drift for high accuracy.

TCA-22 sensor's micro porous membrane allows ions to diffuse in and out of the sensor. The various chlorine species in the measured sample diffuse into the sensor and react with the acidic potassium iodide electrolyte to form iodine. The iodine is reduced at the cathode back to iodide and the current flow between the cathode and silver iodide anode is proportional to total chlorine.

While amperometric chlorine sensors are flow sensitive, the TCA-22 features a constant head flow control device (ECD) design. It maintains the optimum flow by the sensor over a wide range of incoming sample flow rates from 38 to 300 L/hr (10 to 80 gal/hr). It operates over a wide temperature range from 0 to 45ºC (32 to 113ºF).

The TCA-22's built-in C22 Analyzer allows either total chlorine or pH to be displayed graphically. User defined ranges allow easy trend analysis of either parameter. The C22 features a 2.5-x-1.75 inch LED display for local monitoring with simple menu's and membrane switches for easy use.

The panel mount design of the TCA-22 comes pre-wired and with assembled flow tubing. ECD's advanced sensor and controller technologies allow installation and commissioning to be completed in just three easy steps utilizing simple tools. All that is necessary is to connect the sample and drain lines, connect the power and outputs and the TCA-22 is ready to use. Calibration is accomplished by DPD comparison.

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TCA -22
Total Chlorine Analyzer

Click Here for more info

Non-Contacting Conductivity Measurement

S10/17 Toroidal Conductivity Sensors

The S10 and S17 Toroidal sensors have a convenient ¾" diameter PVDF body that can be inserted through tank walls or into pipes as small as 2" I.D. They are compatible with all of the ECD S10 and S17 fittings and valves. Unlike the other S10 and S17 sensors there are no replaceable cartridges, the magnetic toroids and signal conditioners are encapsulated inside the PVDF body. These sensors are ideal for high conductivity solutions like % concentration measurements or any application that coats or corrodes the standard contacting conductivity sensors. Typical installations include monitoring chemical Clean In Place (CIP) applications in the Food and Pharmaceutical industries, acid and base dilutions in the petrochemical and chemical industries and the etching and rinsing cycles in the Semi-Conductor and Metal Processing industries. The measurement range is from 500 µS to 1000 mS.