

**Liquid Instruments**

With a wide selection of sensors, analyzers, gas chromatographs, and other measurement and analysis technologies, Rosemount Analytical helps customers streamline process performance with innovative improvements that increase throughput, minimize energy usage, maximize asset life, and take advantage of continuous online diagnostics for amazing results.

**General pH, Conductivity, and ORP Theory**

**Course 2200 CEUs: .7**

**Overview**

This 1-day course provides a solid theoretical background in pH, conductivity, and ORP measurements. Students will:

- understand how each measurement is made
- recognize installation/application problems
- learn configuration/calibrate procedures
- how to implement a maintenance program
- troubleshooting problems using diagnostics

**Topics**

- What is pH/Conductivity/ORP
- How pH/Conductivity/ORP Measurements are Made
- Physical Process Properties and How They Effect On-Line Measurements
- Proper Calibration Techniques
- Cleaning and Maintenance of a Sensor
- Choosing Correct Sensor for any Process
- How to Decipher Diagnostics Readouts
- pH/Conductivity Sensor Overview
- pH/Conductivity/ORP Analyzer Overview

**Price**  
\$600/person

<b>Location</b>	<b>Start Dates 2012</b>
South USA Region	1/13, 7/20
Gulf USA Region	2/17, 7/27
West USA Region	2/24, 8/24
Central USA Region	3/23, 8/31
East USA Region	3/30, 9/28
Specific Regional Locations	TBD

**Also Available Remote/Site Training**  
Site Training - \$3,000/day plus travel (10 students maximum)

**Amperometric Measurement Theory: Chlorine, Dissolved Oxygen & Ozone**

**Course 2201 CEUs: .7**

**Overview**

This 1-day course provides insight into the complicated amperometric measurements of chlorine, dissolved oxygen and ozone. Students will learn the concepts of how amperometric sensors work and how to calibrate each type of measurement. Students will:

- differentiate the various species of chlorine
- implement a proper maintenance program
- use diagnostics to troubleshoot problems

**Topics**

- Amperometric Measurement Theory
- Chlorine/Dissolved Oxygen/Ozone
- Calibration Procedures for Each Measurement
- Maintenance & Troubleshooting Tips

**Price**  
\$600/person

<b>Location</b>	<b>Start Dates 2012</b>
South USA Region	4/20, 10/5
Gulf USA Region	4/27, 10/12
West USA Region	5/18, 10/26
Central USA Region	5/25, 11/2
East USA Region	6/29, 11/9
Specific Regional Locations	TBD

**Also Available Remote/Site Training**  
Site Training - \$3,000/day plus travel (10 students maximum)

**Rosemount Analytical Two-Wire Instrumentation Models Xmt and 5081 Transmitters**

**Course 2202/2202V CEUs: .2**

**Overview**

This 2-hour class covers features, benefits and operation of any Rosemount Analytical Model 5081 or Model Xmt two wire transmitters. Each transmitter family can measure pH, ORP, contacting conductivity, toroidal conductivity, chlorine, dissolved oxygen and ozone. Both transmitters have advanced diagnostic capabilities and can communicate via HART or Foundation Fieldbus communication protocols.

**Topics**

- Installation and Application Problems
- Configuration of Outputs (HART Only)
- Use Diagnostic Features (If Applicable)
- Sensor Calibration
- Troubleshooting

**LocationStart**      **Dates 2012**  
Customer Site      On Request

**Also Available Remote/Site Training**  
Site Training - \$3,000/day plus travel (10 students maximum)

**Types of Liquid Instruments Training:**

**Formal Classes** are performed on-site or at the Irvine, CA facility in a classroom setting and last from 4 to 8 hours depending on the measurements covered and instrumentation selected. This class is designed to expand a student's sensor measurement knowledge, explain how to properly configure the analyzer to meet plant's monitoring and control needs, proper calibration and care for the sensor, and use of diagnostic variables to troubleshoot problems and schedule routine maintenance or sensor replacement.

**Remote Training** is performed at an off-site facility and is offered to our customer base as demand dictates. Structured as a formal class, remote training offers both lecture and hands-on instruction at a location that more effectively meets our customers' requirements.

**Rosemount Analytical Wireless Instrumentation Models 6081P and 6081C**

**Course 2203/2203V CEUs: .2**

**Overview**

This 2-hour class covers features, benefits, and operation of the Rosemount Analytical Model 6081 wireless device. The Model 6081P measures pH and ORP and is SMART sensor enabled. The Model 6081C measures contacting conductivity with sensors that have either 2-wire or 4-wire inputs. Each device communicates back to a 1420 Gateway via Wireless HART communication.

**Topics**

- Connecting the Model 6081 to a Wireless Mesh Network
- Configuring Update Rates
- Mesh Network Theory
- Sensor Calibration
- Troubleshooting

**Location Start Dates 2012**

Customer Site On Request

**Also Available Remote/Site Training**

Site Training - \$3,000/day plus travel (10 students maximum)

**Rosemount Analytical Four-Wire Instrumentation Models 54e, 1055, 1056, or 1057**

**Course 2204/2204V CEUs: .2**

**Overview**

This 2-hour class covers features, benefits, and operation of any Rosemount Analytical Model 54e, 1055, 1056, or 1057. Each analyzer family can measure pH, ORP, contacting conductivity, toroidal conductivity, chlorine, dissolved oxygen, and ozone. The Model 1056 can also measure turbidity in drinking water and flow from a pulse sensor, and display any 4-20mA signal input. Each instrument has its own available features, and menu tree which will be covered in great detail.

**Topics**

- Installation and Application Problems
- Configuration of Outputs / Alarms (If Applicable)
- Programming of Automated Cleaning Systems (DO, pH)
- Use Diagnostic Features (If Applicable)
- Sensor Calibration
- Troubleshooting

**Location Start Dates 2012**

Customer Site On Request

**Also Available Remote/Site Training**

Site Training - \$3,000/day plus travel (10 students maximum)

**Customer Specific Measurement Theory**

**Course 2205/2205V CEUs: .7**

**Overview**

This 7-hour class is fully customized to cover the specific measurements that the customer requests. A certified trainer will cover up to 4 subjects in one day. The 4 subjects may be measurement or product related. The list of measurements that can be bundled into a tailored made training course are pH, ORP, contacting conductivity, toroidal conductivity, turbidity, chlorine, dissolved oxygen, and ozone. Each measurement theory has its own duration which can be modified to fit the customers' time frame needs. Select an analyzer (course 2204) or transmitter (course 2202) to accompany the measurement theories for a well-rounded class.

**Topics**

- Installation and Application Problems
- Configuration of Outputs / Alarms (If applicable)
- Use Diagnostic Features (If Applicable)
- Sensor Calibration & Maintenance
- Troubleshooting

**Location Start Dates 2012**

Customer Site On Request

**Also Available Remote/Site Training**

Site Training - \$3,000/day plus travel (10 students maximum)

To enroll in Rosemount Analytical courses please call 713-827-6310. For additional contact information refer to the appropriate contact on page 107. Updated dates & locations are available on our website at [www.emersonprocess.com/education](http://www.emersonprocess.com/education).