Optimize Your Process Analyzer Sampling Systems
A Five Day Training Course Hosted by Control Analytics, Inc.

Efficient. Stable. Accurate.

Process analyzer sampling systems are critical to your facility's production control and automation, and an optimized system combines these three traits to provide exceptional analysis performance. Having personnel on-site who can evaluate and determine if a problem is being caused by an analyzer or by the sample system can save valuable time and resources.

Our five day training course has been developed for anyone involved with the design, construction, operation, or maintenance of facility process analyzer sampling systems. Attendees across a range of industries will learn how to optimize systems for success from beginning to end, starting with the process line and tap through the transport lines, stream switching, sample conditioning, analyzation, and sample disposal.

In less than a week, your employees will learn how to recognize and diagnose common flaws in sampling system designs. Hands-on training and other interactive exercises teach attendees to utilize calculations, formulas, and engineering principles to address these issues appropriately. Finally, participants will design a sampling system to present to the class.

Class sizes are restricted to ensure individual interaction and attention from the instructor. Contact 1-800-240-8619 today to reserve your space in our next training session.

Tony Waters
Industry Expert & Consultant
Tony Waters brings over 45 years of experience with sampling systems and process analyzers to our five day training session. He has worked for an analyzer manufacturer, a systems integrator, and end-user in engineering and marketing roles, and founded three companies that specialized in providing analyzer services to the process industries. Tony is an expert in the application of process analyzers in chemical plants and refineries, and is well-known for his training courses. His presentations are popular in countries around the world, and appeal to a variety of specialists, including engineers and maintenance technicians.

Process Analyzer Sampling System Training:

- Diagnose issues in sample transport

- Evaluate to determine optimum sample tap location and appropriate probe

- Analyze and optimize sample transport lag for gases and liquids

- Evaluate return lines and fast loops to calculate pressure drop

- Calculate gas and liquid flow rate

- Circumvent or confirm adsorption and permeation

- Predict vapor condensation in sampling systems

- Avoid or manage phase separation

- Determine if and when vaporization of a sample is appropriate

- Prevent null areas in sampling systems

- Design a sampling system

- Identify system components appropriate to specific sampling system challenges

Process Analyzer Sampling System Training
May 20th – 24th, 8:30am to 5:00pm

at Control Analytics, Inc., 6017 Enterprise Drive, Export PA 15632

DAY 1 Fundamentals: Classwork and Basic Exercises

I. Basic performance criteria and challenges
- Sample compatibility with analyzer
- Time delay in sampling
- Mixing and contamination, including deadlegs

II. Diagnosing and fixing time delay problems
- Sample transport time calculations for liquids and gases
- Gas compressibility and time delay

DAY 2 Classwork and Basic Exercises

Group Project: Design a Complete Sampling System

III. Sample Conditioning Techniques
- Proper use of filters and coalescers
- Liquid, vapor, and gas separation devices
- The difference between vapor and liquid concentration

IV. Sample Tap Design
- Understanding process conditions, analyzer characteristics, and sample requirements
- Location and design of process nozzle
- Probe selection and design

DAY 3 Advanced Design Work

Group Project: Prepare Group Design Presentations

V. Advanced Calculations
- How to determine fluid velocity in line segments
- Laminar and turbulent flow (Reynolds Number)
- Effect of temperature and pressure
- Calculating the pressure drop in each line segment

DAY 4 Advanced Design Concepts

Group Project: Design a Complete Sampling System

VI. Phase Preservation
- How to condense or vaporize a sample (or avoid it)
- How to use phase diagrams
- Design of field stations and fast loops

DAY 5 Stream and Calibration Selection

VII. Techniques of Stream Switching
- Avoiding deadlegs and mixing volumes
- Modular sample conditioning systems
- Design a modular sampling system

VIII. Group Presentations
- Group presentations and instructor comments

Registration Information

The cost for the training is USD $2,000 per person and that includes registration, training, all course materials including take-home workbook, and lunch (5 days) with daily coffee/snack breaks. A $500 deposit, payable by check or credit card, or a purchase order for the full amount, is due upon registration. Balance due 10 business days prior to start of the course. Substitutions of an attendee may be made at any time. Please click for **Class Guidelines** and our **Cancellation Policy**. Please call 1-800-240-8619 to reserve your space, as class sizes are restricted.

Note: Class price does not include travel costs or lodging. For more information on host site accommodations, please click **here**!