Sampling System Training 2021

Improve process accuracy & optimize analyzer performance

Process Analyzer Sampling System Training - PASS

Swagelok has serviced the process analyzer market for more than 60 years. To help optimize your own system success, this expertise is now being presented in a five-day course specially developed for technicians, chemists, engineers or anyone involved in the design, building, operation or maintenance of process analyzer sampling systems.

Our experience tells us that, more often than not, inaccurate results from an analyzer indicate a problem with the sampling system itself, not the analyzer. Our goal is to teach you how to tell the difference. This course will show you how to recognize and diagnose common sampling system design flaws. You will learn how to employ formulas, calculations, and engineering principles rather than rely on guesswork or approximations. In the end, you will design, build, and present your own sampling system.

Topics

- diagnose sample transport problems
- evaluate and determine sample tap location, select an appropriate probe
- calculate and optimize sample transport lag (or time delay) for liquids and gases
- calculate pressure drop in a fast loop or return line
- calculate flow rate for a gas and liquid
- avoid or account for adsorption and permeation
- predict how much vapor will condense in a sampling system
- prevent or control phase separation
- vaporize a sample, if and when it is appropriate
- avoid deadlegs in a sampling system
- read and create sampling system schematics
- design and build a sampling system

For who?

Analytical System and System Design Engineers, Instrumentation Engineers, Integrators, Chemists

Five Days to the Optimization of Your Process Analyzer Systems

Day 1 Fundamentals: Classwork and Basic Exercises

Basic performance criteria and challenge

- Sample compatibility with analyzer
- Time delay in sampling
- Mixing and contamination, including deadlegs
- 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

Proper use of filters and coalescers

- Liquid, vapor, and gas separation devices
- The difference between vapor and liquid concentration
- Sample Tap Design
- Understanding process conditions, analyzer characteristics
- Location and design of process nozzle
- Probe selection and design

Day 3 Advanced Design Concepts

Group Project: Design a Complete Sampling System

Phase Preservation

- How to condense or vaporize a sample or avoid it
- How to use phase diagrams and design of field stations and fast loops

Day 4 Advanced Design Work

Group Project: Prepare Group Design Presentations

Advanced Calculations

- How to determine fluid velocity in line segments
- Laminar and turbulent flow & the effect of temperature and pressure

Day 5 Stream and Calibration Selection

Group Presentation

Techniques of Stream Switching

- Avoiding deadlegs and mixing volume
- Modular sample conditioning systems
- Design and build a modular sampling system

Phil Harris

Industry Expert and Consultant

In his over 30 years in industry and academia, Phil has provided expert insight and analysis for a variety of applications. He is the author of many papers on analyzer systems and routinely presents at industry conferences and technical seminars.

With extensive experience in research, development, and project management, Phil has supported many industries, including nuclear energy, oil refining, and alternative fuels. He earned both his bachelor's and master's degrees from the University of Manitoba. He is an ISA Analysis Division fellow.

Course date

October 4 - 8, 2021

Location

Live training at Swagelok Nederland office in Waddinxveen

More information

Check our website, contact us directly or click on button to register today.

Click here to register

Attendees of the PASS training receive the technical reference book, Industrial Sampling Systems, authored by Tony Waters—a € 245,–

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