

# Swagelok Analytical Instrumentation Training

## Improve Sampling System Results With Our Hands-on Training

### Which Class is Right for Me?

If you design, construct, operate or maintain sampling systems, you know how important quality data is. Inaccuracy usually results from problems within the sampling system, not the analyzer. Our hands-on training helps you to diagnose and eliminate common sampling system design flaws, increasing your efficiency and saving you money. All classes are taught by industry experts, each with over 30 years' experience. Completion of these courses will prepare you to design, maintain or improve the performance of your process analyzer systems.

#### Sample System Problem Solving and Maintenance (SSM), 2 days

For Maintenance Personnel, Reliability Personnel, Analytical System Engineers new to the use of sampling systems

#### Process Analyzer Sampling Systems (PASS), 5 days

For Analytical System Engineers, System Design Engineers, Instrumentation Engineers, Integrators, Chemists who may not be experienced in working with sampling systems

#### PASS-Subsystems, 5 days\*

For Analytical System Engineers, System Design Engineers, Instrumentation Engineers, Integrators experienced in working with sampling systems

### Course Objectives

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| <ul style="list-style-type: none"><li>- Gain a better understanding of sample system components, such as valves and regulators, and their roles within the system</li><li>- Diagnose and troubleshoot sample system errors</li><li>- Learn sample system maintenance techniques</li><li>- Diagnose and fix time delay problems</li><li>- Understand sample system performance</li><li>- Learn why and how samples change phase and how to manage your systems to control it</li><li>- Through hands-on exercises and team projects using fluid system components such as regulators, apply course knowledge to solve real-life problems</li></ul> | <ul style="list-style-type: none"><li>- Introduce the main components of an effective sampling system for process analyzers</li><li>- Identify the three performance goals of a sampling system that must be achieved</li><li>- Understand common reasons for less than optimal system performance</li><li>- Calculate time delay in a sample system</li><li>- Understand in detail how sample conditioning devices work and learn the correct way to install them</li><li>- Design effective sample transport and return lines</li><li>- Learn the effects of phase change on the sampling system</li><li>- Design and present a sampling system made up of components based on given process and environmental conditions</li></ul> | <ul style="list-style-type: none"><li>- Identify the five subsystems that are common to all analyzer sampling systems</li><li>- Explore different ways to set up the subsystems to optimize the overall system</li><li>- Examine the functions that might be performed on the sample in each subsystem</li><li>- Evaluate the design options available for performing subsystem functions</li><li>- Improve subsystem component reliability through proper selection and use</li><li>- Design and present a sampling system made up of components and sub-components optimized for performance</li></ul> |
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\*No pre-requisite for PASS-Subsystems is required, but prior completion of PASS training may be helpful.