Swagelok

Swagelok Pittsburgh | Tri-State Area

SWAGELOK®

# CUSTOMER TRAINING PROGRAMS

*Your Investment in Optimum Safety, Productivity, and Profitability*

***Swagelok Technical Training classes deliver an unparalleled depth of timely and leading-edge content – supplemented with actual hands-on practice – to help significantly reduce your installation errors, excessive maintenance downtime, and overall operating expenses!***

## OUR COURSES

*All customizable to your specific applications and operating challenges:*

***Tube Fitting Installation and Tube Bending | Tube Fitting Inspection and Tube Bending | Hose Essentials | Valve Essentials | Advanced Tube Bending | Sampling System Problem-Solving and Maintenance | Process Analyzer Sampling Systems | Analyzer Technician Essentials | Materials Science | Orbital Welding | Steam and Condensate Essentials***

# COMPREHENSIVE **SAFETY TRAINING**

## WHY SWAGELOK TRAINING?

- We offer an unparalleled array of pertinent and timely course titles
- We can bring our training directly to your site or project location
- All our classes include a full money-back guarantee
- All graduates receive a genuine Swagelok Certificate of Completion, plus several valuable take-home items
- We supply all class materials – students just need to show up
- Our classes count toward Continuing Education credits

## EXPERTISE

*Meet your instructor:*

# MIKE GAGEL,

*a 30+-year Swagelok Company veteran, our Strategic Services Specialist, and certified tube-bending master*

## PROVEN AND TRUSTED

★ ★ ★ ★ ★

# People are Talking about Us.

Recent **Swagelok Pittsburgh | Tri-State Area** Safety Training class graduates have had plenty to say:

"The hands-on tube-bending practice — plus the instructor's willingness to thoroughly answer our real-world application questions — was worth the price alone."

"Your instructor held my interest the entire day."

"I took away so much from the Essentials class that I plan to enroll in your next Advanced Bending multi-day course."

"The general course information combined with the hands-on mechanical skills refresher was powerful."

"What I learned about making better and neater parallel tubing runs was exceptionally helpful."

"I learned different bending techniques that will be extremely valuable in my job."

"I loved your hands-on teaching approach!"

"Not only will I now save time and money while making bends...my work will also look more professional."

"The instructor takes tube bending to another level."

"Now I have the confidence to do any bending job given to me in our shop."

# TUBE FITTING **INSTALLATION** AND TUBE BENDING

**Duration:** 1 DAY

## *LEARNINGS:*

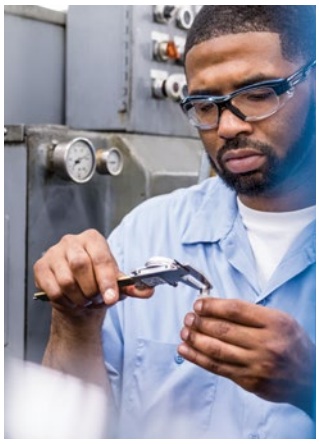
- **Foundational fluid system knowledge to ensure overall system integrity and minimal leakage**
- **Properly select the ideal tubing for your applications**
- **Cut and deburr tubing**
- **Safely assemble a Swagelok tube fitting**
- **Gauge a tube fitting assembly**
- **Bend tubing of various materials and diameters**
- **Inspect tubing to secure defect-free bends**

# TUBE FITTING **INSPECTION** AND TUBE BENDING

**Duration:** 1 DAY

## *LEARNINGS:*

- **Identify correct tube system placement**
- **Safely and properly install Swagelok tube fittings**
- **Troubleshoot common fluid system errors/issues**
- **Bend tubing of various materials and diameters**
- **Inspect tubing to secure defect-free bends**



If desired, our all-day **Installation & Bending** AND **Inspection & Bending** classes can be consolidated into a one-day Installation/Inspection/Bending session.

Swagelok

# ADVANCED TUBE BENDING

*(2.5, 3, or 3.5 Days... your choice)*

*Learn **TWO** proven and trusted Bending methods: **Measure-Mark-Bend** and **The Swagelok Master Technique***

***Training that Meets Your Schedule:*** *Select a 2.5-day, 3-day, OR 3.5-day learning event*

***Train** at our leading-edge Pittsburgh Training Center OR enroll at least FOUR students and we'll bring our training course to you*

## BENDING METHODS

### The Measure-Mark-Bend

The traditional basic way you've employed or heard about.

### The Swagelok Master Technique

For superior accuracy and aesthetics. You'll learn how to precisely mark all the locations of all bends in a tubing run – to determine the overall length of tubing required – prior to actually making any bends. **Best of all:** This process works for all bend angles.

## Types of bends we demonstrate, immediately followed by YOUR hands-on exercises:

- **Offsets** – Learn how to change the centerline of a tubing run.
- **Custom Offsets** – Figure out a bend angle less than 22.5° to enable you to make an offset bend.
- **Off-Plane** – For those times when bends must be rolled to a particular angle. See how to mark the tube before positioning it in the hand bender – to drastically reduce mistakes/waste.
- **Rolling Offset** – Know what to do if your tubing run is offset in the horizontal plane AND, at the same time, in the vertical plane? We can help you solve such a seemingly difficult challenge!
- **Segmented** – Have any idea how to bend a 1" tube around a 6' tank? See how to calculate equal leg lengths so you can ultimately make a 90° bend using four 22.5° bends. Yes, that certainly sounds complicated; we'll show you why it's not.

## SO, WHICH TIMEFRAME IS BEST FOR ME/MY CREW?

### 2.5-Day Course

Learn at a comfortable pace, with plenty of time for hands-on exercises and personal tutoring.

### 3-Day Course

Everything described in the 2.5-day course, but with our renowned **Tube Fitting Installation Safety** primer.

### 3.5-Day Course

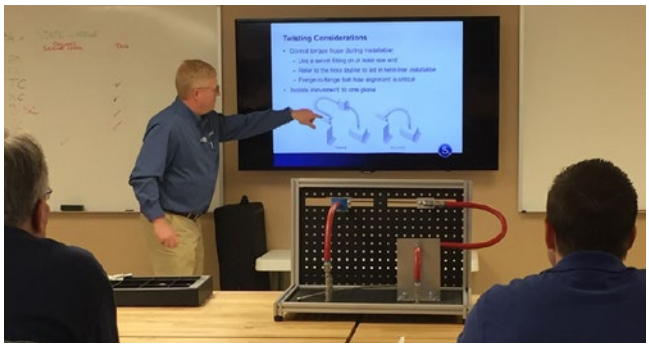
**Your best overall value...** Everything from our 3-day course, but with added practice time to make challenging bends within a large electrical box to simulate real on-the-job conditions.

# HOSE ESSENTIALS

**Duration:** 1/2 DAY

## *LEARNINGS:*

- **Evaluate hose fit for purpose**
- **Route and size hose per application**
- **Apply the proven STAMPED methodology for optimum hose/end connection selection**
- **Clean and store hose**
- **Inspect and maintain hose**

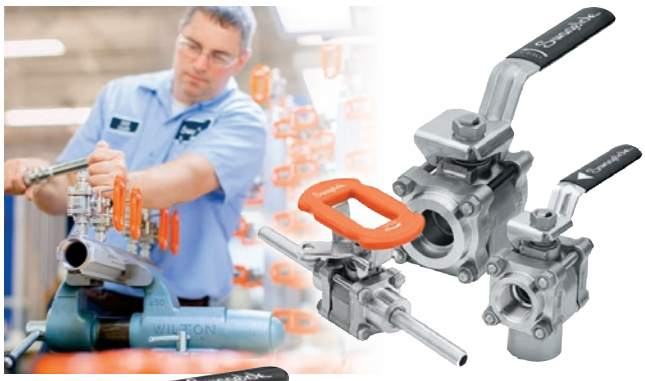


# VALVE BASICS

**Duration:** 1/2 DAY

## *LEARNINGS:*

- **Select, troubleshoot, and maintain valves**
- **Understand valve types, operations, and functions**
- **Interpret a flow curve and pressure/temperature tables**



Combine our **Hose Essentials** and **Valve Essentials** classes for a full day of highly in-depth, cost-effective, product/application training!

# SAMPLING SYSTEMS **TRAINING**

## ANALYZER TECHNICIAN ESSENTIALS

**Duration:** 2 DAYS

***Particularly relevant for those new to sampling — as well as analyzer and laboratory technicians***

- Hands-on learning that will hone your ability to find and address root causes of issues
- Evaluate an existing sample and apply gained knowledge to reverse engineer a system
- Get the engineering principles, formulas, and calculations to eliminate system guesswork
- Among multiple other learnings, fully understand the severe and unsafe consequences of inaccurate sampling

## SAMPLING SYSTEM PROBLEM-SOLVING AND MAINTENANCE (SSM)

**Duration:** 2 DAYS

***Ideal for technicians, maintenance personnel, system engineers***

- Know how to troubleshoot a vast variety of common sampling issues – process line through sample disposal
- Recognize and diagnose design flaws that cause excessive time delay and yield poor samples
- Get the formulas, calculations, and engineering principles that will greatly improve your current troubleshooting practices
- Understand how to optimally maintain your system – with fewer errors and better overall integrity

## PROCESS ANALYZER SAMPLING SYSTEMS (PASS)

**Duration:** 5 DAYS

***Suited for system/design engineers, chemists, integrators, highly skilled technicians***

- Apply our expert design principles to prevent costly sampling system issues
- Know how a sampling system functions from the process line and tap through the transport lines and stream switching, sample conditioning, and analyzer/disposal procedures
- Find out how to identity the root causes of system design troubles
- Grasp how to ensure accurate process analyzer readings

## PROCESS ANALYZER SAMPLING SUBSYSTEMS

**Duration:** 5 DAYS

***Meant for experienced sampling engineers, design engineers, integrators, highly skilled technicians***

- Develop an understanding of complex system subassemblies
- Master how to design and build subsystems into complete optimized sampling systems
- Learn the five standard subsystems:  Sample Extraction, Sample Disposal, Sample Conditioning, Calibration Switching, Field Preconditioning

## STEAM AND CONDENSATE ESSENTIALS

**Duration:** 2 DAYS

### *LEARNINGS:*

- Steam Overview
- Steam Tables
- Flash Steam and Recovery
- Steam/Condensate Distribution Piping
- Steam Valves
- Condensate Recovery Systems
- Steam Traps
- Waterhammer
- Steam Cost and Quality
- ...and much more

## ORBITAL WELDING

**Duration:** 5 DAYS

### *LEARNINGS:*

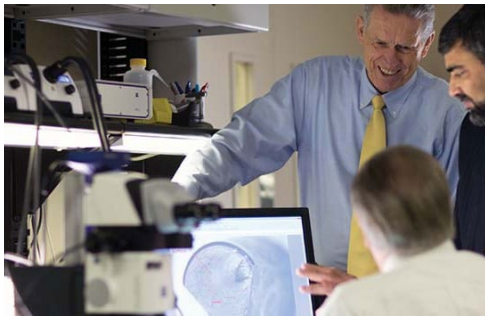
- Basic welding principles
- How to set up and operate a Swagelok M200 Orbital Welding System
- Ideal troubleshooting tactics for common welding problems
- All you need to know to confidently test for AMSE Section IX certification (on final day of session)

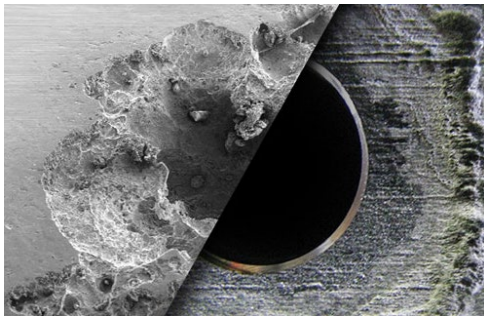
## MATERIALS SCIENCE

**Duration:** 1 DAY

### *LEARNINGS:*

- Key principles of materials science, corrosion, and other factors that affect material properties
- Corrosion types and best practices to combat challenges
- How to select the optimal materials of construction for your most demanding applications based on pressure/temperature ratings, corrosive threats, and compliance





# Leakage:
## Cost and Consequence

**Make your workplace safer and more profitable by choosing and properly installing the industry's most reliable and proven fittings: Genuine Swagelok.**

Swagelok's renowned Tube Fitting Installation and Tube Bending Safety Essentials class teaches students how to safely and correctly assemble tube fittings. Participants also learn how to select, handle, prepare, cut, and debur tubing of different materials before making bends of 45º, 90º, 180º – plus offsets. Get TWO Swagelok Certificates of Completion for just one day of training!

### LOST FLUID
millions of litres are wasted each year
(1 gallon of hydraulic fluid ≈ $14 USD)

### LOST PRODUCTION
especially important in offshore oil where laws already limit production to a specific number of days per month

### EQUIPMENT DAMAGE
loss of lubrication can lead to premature wear/machine failure

### OFF-SPECIFICATION PRODUCT
can be produced inadvertently due to improperly calibrated or operating instruments; material must be reworked, sold at reduced price, or disposed of

### DEGRADED WORK ENVIRONMENT
oil drippage can cause accidents; emissions can be expensive, dangerous—even illegal

### FINES FOR NONCOMPLIANCE
systems and equipment that violate validated processes can quickly become costly

### CLEANUP
it takes time to locate and repair leaks; some call for special teams to manage toxic chemicals; there's also the cost of shutting down a system to thoroughly clean it

Fluid System Performance:

# Optimize, Improve, Maintain at Every Turn

Don't let your system's performance take a backseat to other priorities. Instead, create a culture that focuses on improvement and education—minimizing errors and arming employees with the confidence and expertise to spot issues as they arise.

### Properly Diagnose.
Most system challenges are caused by installation issues, not components.

**Did You Know?**
Fittings that are not properly tightened or ferrules that are turned backward can cause leaks and fugitive emissions.

### More Efficiencies = More Savings.
Simple troubleshooting and proper design can prevent thousands of dollars in lost time, material waste, and cleanup.

**Did You Know?**
Products designed to work together perform better together. Do not intermix brands.

### Train Your Teams.
Teaching employees to work safer and smarter through fluid system training programs can improve system performance.

### Add Perspective.
Sometimes, a fresh set of eyes and ears can help identify issues employees are used to seeing and hearing.

### Trust an Expert.
Some issues can only be caught by a highly trained specialist, and critical operations should never be left to anyone not well-versed in system health and performance. **As an extension of your team, Swagelok can help.**

**Take the next step toward improved system performance.**
**Swagelok.com/OptimizeYourSystem**

Swagelok

# PUT OUR TEAM ALONGSIDE YOURS

*Premium-Quality,*

## LEAK-TIGHT COMPONENTRY

### TUBE FITTINGS | VALVES | GAUGES | HOSES | TUBING | REGULATORS | MANIFOLDS

Since 1947, Swagelok products have provided unparalleled reliability, durability, and performance in even the most challenging fluid-handling applications and environments. No matter what your industry – Oil and Gas, Chemical, Petrochemical, Steel, Power, or Applied Research – we offer unique solutions and support to help relieve your most demanding operational pressures: knowledge drain, diminished resources, system inefficiencies, and worker/site safety.

*Proven*

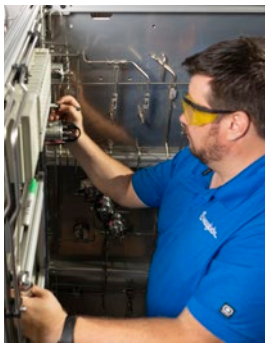
## APPLICATION EXPERTISE

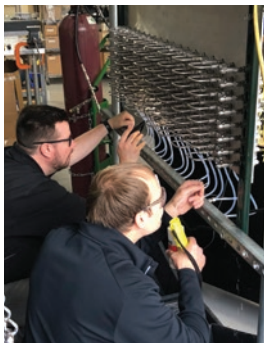
Let us help you choose the optimum Swagelok componentry or fabricated assembly for your particular application – no matter how complex or routine your job. Our trained and friendly Technical Sales and Support Team provides reliable recommendations on how you can confidently and quickly reduce operational downtime and other major system inefficiencies. Whatever your fluid-system challenge, we have the technical know-how and always-on-hand inventory to enable you to get more done safely: **on-time, on-plan, and on-budget!**

*Masterful*

## CUSTOM FABRICATION

### PANEL/SKID DESIGN AND BUILD – SIMPLE TO COMPLEX ASSEMBLIES





### State-of-the-Art, 5,000 sq. ft. Working and Staging Area

- Dedicated Swaging, Bending, Coiling, Orbital Welding, Kitting, Packaging/Wrapping, Inspection, Testing, and Cleaning Stations
- Climate-Controlled Environment
- 5-ton Overhead Crane, with an 18-foot clearance

*Trusted*

## SYSTEM EVALUATIONS AND ADVISORIES

### MEDIA LEAKAGE | INDUSTRIAL HOSE AUDITS:
BEST PRACTICES FOR SAFETY, SELECTION, SIZING, AND STORAGE

Our **Energy Management Specialists** will conduct an on-site survey to identify and tag the leaking tube fitting, pipe, and valve connections that put your workers, equipment, end product, and overall profitability at substantial risk. Our certified **Hose Advisors** will closely audit your current hose usage to determine if your hose types, routes, lengths, and end connections are ideally suited to your specific applications.

*Always-Available*

## TOOL RENTALS

We lease pristinely maintained Benchtop and Electric Tube Benders, Multi-Head Hydraulic Swaging Units, and Orbital Welders for daily, weekly, or monthly use. Why buy new if your need is short-term or infrequent?

# Delivering the Global Power of Swagelok – Locally

**Greg Hines**
*President*

"Our unwavering commitment to quality – our people, our products, our service – is how we've helped keep our customers safe and successful for almost 65 years."

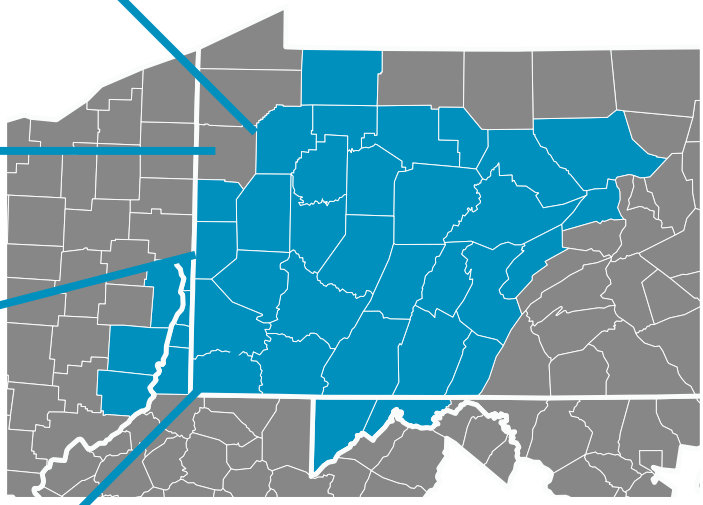
**HOURS**
**8AM-5PM M-F**

**28 Customer-First ASSOCIATES**

**8 ENGINEERS**

**DEDICATED**
**TECHNICAL SUPPORT TEAM**

## SERVICE AREA



99%+
Shipping Accuracy

3,000
SKUs Stocked at All Times

25,000
sq. ft. Campus

## Our Promise:

In each and every customer engagement and interaction, no matter how challenging your application or operating conditions, we will deliver premier-quality Swagelok Fluid-System Product Solutions and value-added Strategic Services that will make you safer, more productive, more efficient, and more profitable.

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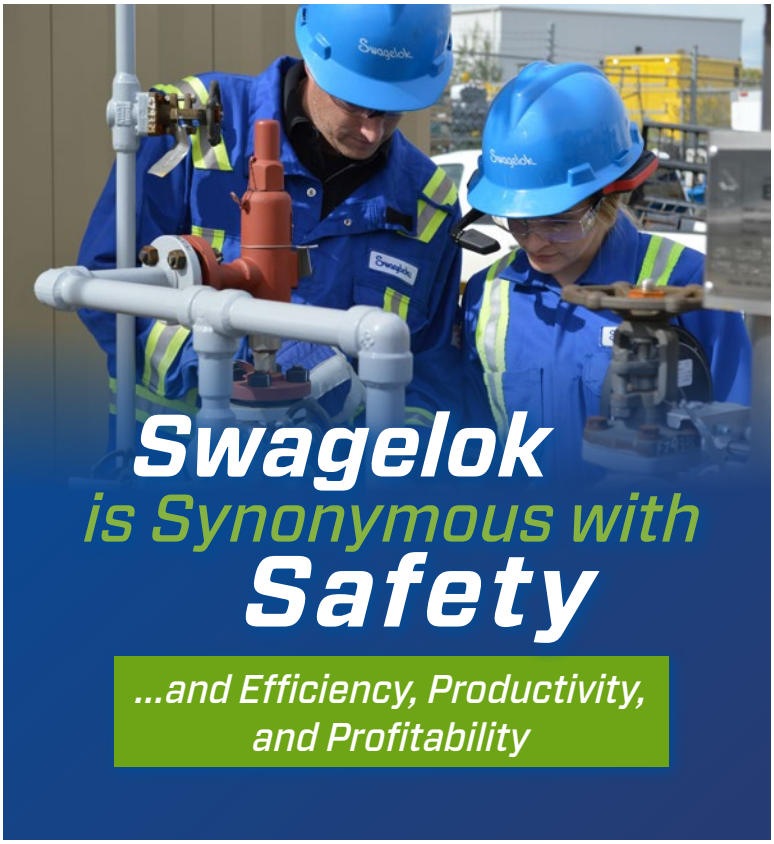

**To learn more about HOW Swagelok is truly different versus all other competitive manufacturers and brands – and how that difference will substantially improve your Bottom Line health, contact:**

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**P:** 412.761.3212

pittsburgh.swagelok.com

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