



SWAGELOK

STEAM TRAINING OFFERINGS



Swagelok®

Swagelok Pittsburgh | Tri-State Area

LEVEL 1: STEAM BASICS

Duration: ONE DAY

Overview: Provides attendees with a solid foundation understanding of steam principles and processes. Addresses 10 critical areas of steam system management, including Steam Cost Calculations, Flash Steam Recovery, Steam Traps, Steam Fundamentals, Steam Quality, Steam System Components, Safety, and Waterhammer. Attendees also learn key troubleshooting tips.

Agenda:

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|-----------------------------------|---|
| Steam Overview: | <ul style="list-style-type: none">• General Overview• How to Calculate BTU Usage• Understanding the Vapor• Superheat Benefits/Production• Tasks: Equipment BTU Calculations |
| Steam Tables: | <ul style="list-style-type: none">• Using Steam Tables• BTU Calculations |
| Cost of Steam: | <ul style="list-style-type: none">• Understanding Steam Cost |
| Flash Steam: | <ul style="list-style-type: none">• Why Flash Occurs• Effects on the System• Calculating the Flash Percentage• Tasks: Using Tables to Determine Flash Steam Quantity• Tasks: Energy Loss Calculations When Flash Steam Not Recovered |
| Flash Steam Recovery: | <ul style="list-style-type: none">• Recovery System• How to Manage Flash Steam Generation• Different Flash Steam Operating Systems• When to Recover and How to Recover• Advantages/Disadvantages of Different Recovery Systems• Flash Tank Sizing• Tasks: Implementing a Flash Recovery System on a Modulating System• Tasks: Implementing a Flash Recovery System on a Non-Modulating System |
| Steam Distribution Piping: | <ul style="list-style-type: none">• Overview of the Codes• Installation Best Practices for Steam Lines• Connections: Weld, Flanges, Tube, Threaded• Condensate Removal from Steam Lines (Location, Standards, Materials)• Materials for Different Steam Systems• Guides and Supports (Differences, Locations)• Anchors• Condensate Systems (installation Best Practices for Condensate Lines)• Tasks: Steam Line Condensate Removal, Steam Line Air Venting• Tasks: Sizing Process Steam Lines, Sizing Non-Process Steam Lines |
| Condensate Piping: | <ul style="list-style-type: none">• Code Overview• Condensate Systems• Tasks: Sizing Condensate Lines |

[more >](#)



LEVEL 1: STEAM BASICS

Duration: ONE DAY

Agenda:

(continued)

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|---|--|
| Steam Valves: | <ul style="list-style-type: none">• Overview of All Valves Used in Steam• Operational Design• Which Valves for Which Applications• Testing Valves• Tasks: Review Testing Valves Results |
| Steam Pressure
Letdown Stations: | <ul style="list-style-type: none">• Selection Process• Valve Options and Selections• Turndown Capabilities of Different Valves• Installation• Operation• Troubleshooting (Testing, Procedures, Analyzing)• Tasks: Sizing a Pressure Letdown Station, Selecting the Correct Valve Arrangement, Develop an Installation Detail, Review Different Applications |
| Steam Valves
Testing
Procedures: | <ul style="list-style-type: none">• Testing Valves (Equipment, Procedures)• Tasks: Review Testing Valve Results |
| Steam Trap
Stations: | <ul style="list-style-type: none">• Overview• Types of Steam Traps• Operation• Tasks: Steam Trap Selection |
| Condensate
Recovery
Systems (Tanks
and Pumping
Systems): | <ul style="list-style-type: none">• Why Return Condensate• Emission Reductions• Energy Reductions• Optimization• How to Calculate for Condensate Recovery• Pump Types• Pump Type Advantages/Disadvantages• Pump Operation• Sizing Condensate Tanks• Tasks: Sizing a Condensate Pumping System, Design a Condensate Tank System, Installation RFQ |

Cost per Student:

• Pricing TBD



LEVEL 2: STEAM BASICS

DURATION: COMPLETION OF LEVEL 1 + ONE DAY

Overview: Builds on all steam concepts covered during Steam Basics I course by providing attendees with a comprehensive understanding of steam energy and efficiency techniques. Course addresses 10 advanced steam system management subjects such as boiler performance, heat recovery methods, piping, steam expansion, and insulation.

Note: This program follows the same agenda as Level 1, only more comprehensively.

Cost per Student:

Level 1 AND Level 2 (Two-Day Total):

- Pricing TBD



LEVEL 3: STEAM SYSTEM ENGINEERING, DESIGN, AND OPTIMIZATION: STEAM SYSTEM SPECIALIST/TOTAL SYSTEM RELIABILITY, SAFETY, AND OPTIMIZATION

DURATION: COMPLETION OF LEVEL 1 AND LEVEL 2 + ONE DAY

Overview: Reviews all aspects of a steam system and is designed to provide attendees with a solid foundation of understanding a total steam system from steam generation through condensate recovery.

Note: This program follows the same agenda as Level 1 and 2, only more comprehensively and with additional content added on days 2 and 3.

Agenda: Covers Level I and II Steam Basics Topics, PLUS:

- Waterhammer:**
 - Causes
 - Types
 - Solutions
- Steam Leakage Causes and Corrections:**
 - Different Steam Leakage Areas
 - Estimating Energy Losses
 - Emissions Calculations
 - Root Cause Analysis
 - How to Start a Program
 - Things to Review When Analyzing
 - Methods to Prevent Steam Leakage
- Standard Operating Procedures:**
 - Proper Steam System Start-Up Procedures
 - Proper Steam System Shut-Down Procedures
 - Start-Up and Shut-Down (Letdown Stations)
 - Warm Valve Operation and Procedures
 - **Tasks:** Write a Start-Up/Shut-Down Procedure
- Steam Balancing:**
 - Understanding Steam Balancing Dynamics
 - How to Develop Steam Balance
 - Benefits of a Steam Balance
 - **Tasks:** Balancing a Steam System (Training Print)
- Steam Quality:**
 - What is Steam Quality
 - Process Operation Effects and Steam Components
 - How to Quantify and Test in the Field
 - What are Necessary Steps to Improve Steam Quality



[more >](#)

LEVEL 3: STEAM SYSTEM ENGINEERING, DESIGN, AND OPTIMIZATION: STEAM SYSTEM SPECIALIST/TOTAL SYSTEM RELIABILITY, SAFETY, AND OPTIMIZATION

DURATION: COMPLETION OF LEVEL 1 AND LEVEL 2 + ONE DAY

Agenda:

(continued)

Steam Trap Station Management:

- Selection Process for Different Steam Traps
- Sizing Steam Traps for Proper Operation
- Developing a Steam Trap Station for Your Plant
- Steam Trap Station Management

Steam System Thermal Cycle Efficiency:

- Thermal Cycle Efficiency
- Items that Make Up the System
- Items that Affect the System Efficiency
- Benchmarking and How to Improve

Cost per Student:

- Pricing TBD



FOLLOW US:   

LEVEL 3: PAGE 2 OF 2

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