Process Control: Instrumentation, Troubleshooting and Problem Solving

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Why Attend
This course provides a complete and up-to-date overview of the process control, instrumentation and troubleshooting techniques used to solve process problems. It will provide participants with the knowledge and skills needed to troubleshoot and solve various problems encountered when working with instrumentation and controls systems.

They will review process measurement fundamentals and gain a sound understanding of the operation and set up of transmitters before elevating their knowledge onto more complex concepts of process control.

The different control concepts and strategies will be covered allowing participants to identify which one to apply to their own work in order to effectively operate and troubleshoot a process. A 7-step systematic method of troubleshooting will be provided in order for all participants to logically and effectively troubleshoot a system regardless of the type of system.

Course Methodology
This course offers practical exercises that will allow all participants to use the knowledge they gained to demonstrate their skills in troubleshooting a process problem.

Participants will be provided laptops and immersed into an interactive environment where they will learn how to:
- Perform calculations of turn down ratio required for a specific application
- Provide measurement solutions
- Calculate the given current output for any given input to the transmitter
- Calculate the time constant for a process
- Arrive at base values for the parameters of proportional, integral and derivative values

Course Objectives
By the end of the course, participants will be able to:
- Operate the most common measuring process parameters
- Demonstrate the ability to properly set up a transmitter to measure pressure, flow, level and temperature
- Define and apply control concepts including self-regulating and non-self-regulating processes, positive/negative feedback and process time constant
- Outline the major control strategies and identify which one to apply in order to effectively operate and troubleshoot a process
- Use the 7-step systematic troubleshooting process to logically troubleshoot a system regardless of the type of system

Target Audience
This course is designed for instrumentation and control personnel including general maintenance personnel, plant managers and supervisors, control and instrumentation technicians and engineers, automation engineers, electricians and general engineers.

Target Competencies
- Instrumentation
- Measuring process parameters
- Process control
- Troubleshooting

Course Outline
- Instrument terminology
  - Span
  - Range
  - Sensitivity
  - Accuracy
  - Resolution
  - Turn down ratio
• Zero suppression
• Elevation

• Measuring process parameters
  • Methods of level measurements
    ▪ Direct methods
    ▪ Inferred methods
  • Measuring pressure
  • Measuring temperature
  • Measuring flow
  • Measuring level

• Instrument loops and transmitters
  • Operation of 4-20 milliamp loops
  • Basic operation of instrument transmitter
  • Setting up a transmitter
  • Converting units
  • Calibration of instrument loops overview

• Process basics
  • Types of processes
  • Self-regulating processes
  • Non-self-regulating processes
  • Process time constants
  • Positive feedback
  • Negative feedback

• Process control strategies
  • Two position control
  • Proportional control (P)
  • Proportional and integral control (PI)
  • Proportional and integral and derivative control (PID)

• Troubleshooting
  • 7-step troubleshooting process
    ▪ Symptom recognition
    ▪ Symptom elaboration
    ▪ Localize the faulty function
    ▪ Localize the faulty circuit
    ▪ Localize the faulty component
    ▪ Repair the faulty component
    ▪ Re-test
  • Half splitting a process
  • How to perform measurements on the process
Fees: US$ (including coffee breaks and a buffet lunch daily)

Per participant - 2020

US$ 4900

Fees + VAT as applicable

UAE Tax Registration Number 100239834300003
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Meirc Timeline

2018
Meirc celebrates its 60th anniversary

2015
Meirc relocates to its newly acquired HQ office in Bay Square, Business Bay, Dubai

2014
Meirc adds PLUS Specialty Training, a new division providing technical and industry-specific courses

2007
Meirc opens an office in Jeddah, Saudi Arabia

2004
Meirc opens an office in Abu Dhabi, UAE

1997
Meirc is the 1st training company in the region to have its own website

1991
Meirc becomes headquartered in Dubai, UAE

1988
Meirc celebrates its 30th anniversary with its advisory committee (Aramco, Bapco, KOC, QPC)

1967
Meirc builds its own office building in Beirut

1958
Meirc is founded in Beirut by the late Simon Siksek