

PCI-100

Understanding Industrial Process Control / Level One Process Measurement & Control Fundamentals

Course Description

This 36-hour training program uses a hands-on approach providing students with a fundamental understanding of industrial process measurement & control systems. Participants will learn the basic measurement & control principles, terminology, symbols & documentation standards. In addition students will perform hands-on exercises with actual industrial temperature, pressure, flow & level measurement & control devices to gain experience in how to set up & troubleshoot a control system.

Topical Outline

- Introduction to ISA documentation standards
 - Process Flow Diagrams (PFD's)
 - Piping & Instrument Diagrams (P&ID's)
 - Loop Diagrams
 - Location Plans
 - Installation Details
- Test Equipment
 - Calibrators
 - Digital Multimeters
 - Power Supplies
- Signals
 - Analog: voltage, milliamps
 - Digital: on/off, digital data
 - Wiring basics
- Elements of a Process Control Loop
 - PV-Process Variable
 - MV-Manipulated Variable
 - C-Controller
- Temperature Measurement
 - Thermocouples
 - RTDs
- Thermometers
- Infrared
- Characteristics
- Thermowell
- Transmitters
- Pressure Measurement
 - Gauges
 - Transmitters
 - Block & Bleed Valves
- Flow Measurement
 - DP Meters
 - Turbine Meters
 - Pd Meters
 - Variable Area Meters
- Level Measurement
 - Float Gauges
 - Static Head Gauges
 - Sounding Gauges
- Control Valves
 - Types
 - Accessories
 - Sizing
- Basic Troubleshooting

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Prerequisite

This is an entry level course & requires only that participants be familiar with industrial manufacturing processes.

Course Length

36 hours

CEU's

3.3

Objectives

Persons successfully completing this course will be able to:

- Understand the role of measurement and control in industrial processes.
- Read and interpret the documents used to define instruments and control systems.
- Convert the various process measurement units, English and Metric
- Use basic calibration and test equipment.
- Know the fundamental principles, equipment and techniques for the four primary industrial process measurements of temperature, pressure, level, flow.
- Build, test, operate and troubleshoot a simple feedback control loop.