# Process Instrumentation
## Fundamentals of Clamp-On Flow

### General Information

<table>
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<th>Course Code: PIA-PRFCOC1A</th>
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<td>Length: 1 Day</td>
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### Audience

This Introductory course is intended for technical individuals responsible for routine maintenance and calibration of SITRANS FUS/FUE/FST clamp-on flowmeters. Additionally sales representatives responsible for selling and specifying these meters will benefit from this class.

### Prerequisites

- Basic knowledge of pipes and piping system terminology.

### Profile

This course covers basic theory, programming, and installation of the SITRANS FUS/FUP/FUE and FST020 flowmeter types. It includes a complete review of the hardware components and software menu structure, installation guidelines and commissioning process. This course also gives the students an overview of fundamental diagnostics for validation of meter operation. The course includes a hands-on exercise with actual flowmeter systems to reinforce the training presentation.

### Objectives

*Upon completion of this course, the student shall be able to:*

- Select the appropriate flowmeter type and sensors for their application.
- Select a suitable installation location
- Fully program their meter for the selected application
- Perform a sensor installation
- Perform system start-up
- Verify system performance

### Topics

1. Fundamental Clamp-On Flowmeter Theory
2. System Hardware
   - Flowmeter models & Specs
   - Sensor Types and Utilization
   - Sensor Mounting Hardware
3. Software Menu
   - Programming Methodology
   - Required Program Data
   - Initialization
4. Installation
   - Sensor Mounting Methods
   - Sensor Location
   - Straight Run Requirements
   - Pipe Configuration Tool
   - Cable Connections
   - Special Considerations for Energy Systems
5. Start-Up
   - Initial Makeup Process & Results
   - Zeroing
   - Saving Sites
   - Flow Data
   - Energy Data
   - Optional Programming
6. Verification
   - Primary Performance Indicators
   - Signal Graph Analysis
   - Energy Rate Calibration
7. Labs
   - Basic Programming Exercise
   - Complete Installation and Initialization Exercise
   - Troubleshooting Exercise