# Table of Contents

<table>
<thead>
<tr>
<th>Educational Program Overview</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Instrumentation Seminars</td>
<td>5</td>
</tr>
<tr>
<td><strong>Level Measurement</strong></td>
<td></td>
</tr>
<tr>
<td>Continuous Level</td>
<td>6</td>
</tr>
<tr>
<td>Ultrasonic Level</td>
<td>7</td>
</tr>
<tr>
<td>Non-Contacting Radar Level</td>
<td>8</td>
</tr>
<tr>
<td>Guided Wave Radar Level</td>
<td>9</td>
</tr>
<tr>
<td>Continuous Capacitance Level</td>
<td>10</td>
</tr>
<tr>
<td><strong>Flow Measurement</strong></td>
<td></td>
</tr>
<tr>
<td>Flow</td>
<td>11</td>
</tr>
<tr>
<td>Magnetic Flow</td>
<td>12</td>
</tr>
<tr>
<td>Clamp-On Ultrasonic Flow Measurement</td>
<td>13</td>
</tr>
<tr>
<td>Mass Flow</td>
<td>14</td>
</tr>
<tr>
<td><strong>Pressure Measurement</strong></td>
<td></td>
</tr>
<tr>
<td>Pressure Measurement</td>
<td>15</td>
</tr>
<tr>
<td><strong>Temperature Measurement</strong></td>
<td></td>
</tr>
<tr>
<td>Temperature Measurement</td>
<td>16</td>
</tr>
<tr>
<td><strong>Weighing Technology</strong></td>
<td></td>
</tr>
<tr>
<td>Weighing Technology</td>
<td>17</td>
</tr>
<tr>
<td>Belt Scales</td>
<td>18</td>
</tr>
<tr>
<td><strong>Valve Positioners</strong></td>
<td></td>
</tr>
<tr>
<td>Valve Positioners</td>
<td>19</td>
</tr>
<tr>
<td>Cost of Air &amp; Carbon Footprint</td>
<td>20</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
</tr>
<tr>
<td>WirelessHART Technology</td>
<td>21</td>
</tr>
<tr>
<td><strong>Industry-Specific Seminars</strong></td>
<td></td>
</tr>
<tr>
<td>Water Systems</td>
<td>22</td>
</tr>
<tr>
<td>Oil &amp; Gas Solutions</td>
<td>23</td>
</tr>
<tr>
<td>Solutions for the Chemical Industry</td>
<td>24</td>
</tr>
<tr>
<td>*<em>Process Instrumentation Learning Centers (<em>CEU Approved)</em></em></td>
<td></td>
</tr>
<tr>
<td>Field Instrumentation*</td>
<td>26</td>
</tr>
<tr>
<td>Level Technologies*</td>
<td>27</td>
</tr>
<tr>
<td>Flow Technologies*</td>
<td>28</td>
</tr>
<tr>
<td>SITRANS FUG1010 Clamp-On*</td>
<td>29</td>
</tr>
<tr>
<td>SITRANS FUH1010 &amp; Leak Detection*</td>
<td>30</td>
</tr>
<tr>
<td>SITRANS FUS/FUE1010 Clamp-On*</td>
<td>31</td>
</tr>
<tr>
<td>Weighing and Feeding</td>
<td>32</td>
</tr>
<tr>
<td>Essential HART Communication</td>
<td>33</td>
</tr>
<tr>
<td>PROFIBUS PA Design</td>
<td>34</td>
</tr>
<tr>
<td>Advanced Radar</td>
<td>35</td>
</tr>
<tr>
<td>Advanced Ultrasonics</td>
<td>36</td>
</tr>
<tr>
<td>Advanced Weighing and Feeding</td>
<td>37</td>
</tr>
</tbody>
</table>
Education Program Overview

How can you make a more informed decision about the technology you use in your applications?

We are all charged with doing more with less these days – more productivity, greater bottom line, lower cost, and, in some instances, fewer people. How do you know that you are using the best technology for your application? Siemens experts are available with a variety of seminars to help you further understand the difference between technologies and instruments, and what new technology is available to help you increase your yield. We want to help you increase productivity without paying for features you won’t use.

Any of these seminars can be modified to suit your needs. For instance, you can merge the flow and level seminars to one offering or we can shorten any of these seminars to a lunch and learn format if time is pressing. Just speak with your local Siemens partner about your needs.

These seminars complement the Siemens suite of trainings available to you. For more in-depth and hands-on technical trainings, Siemens experts are available at a number of training locations throughout the country. Full course descriptions begin on page 6. The schedule can be found on www.usa.siemens.com/pitraining.

Only have time to check online after hours? We offer a suite of online trainings options including videos, webinars, interactive modules and e-publications. For a full list of online training visit our website: www.siemens.com/pi-elearning.

Who should attend?

- Instrumentation Technicians
- Maintenance Personnel
- Maintenance Managers and/or Supervisors
- System Integrators
- Engineers
- E&I Managers and/or Supervisors
- Project Managers
- Plant Managers
# Siemens Process Instrumentation Seminars

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Time Required</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level Measurement Seminars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-100</td>
<td>6 Hours</td>
<td>Continuous Level Technology</td>
</tr>
<tr>
<td>SEM-101</td>
<td>3 Hours</td>
<td>Ultrasonic Level</td>
</tr>
<tr>
<td>SEM-102</td>
<td>4 Hours</td>
<td>Non-Contacting Radar Level</td>
</tr>
<tr>
<td>SEM-103</td>
<td>3 Hours</td>
<td>Guided Wave Radar Level</td>
</tr>
<tr>
<td>SEM-104</td>
<td>2 Hours</td>
<td>Continuous Capacitance Level</td>
</tr>
<tr>
<td><strong>Flow Measurement Seminars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-110</td>
<td>6 Hours</td>
<td>Flow Technology</td>
</tr>
<tr>
<td>SEM-111</td>
<td>2 Hours</td>
<td>Magnetic Flow</td>
</tr>
<tr>
<td>SEM-112</td>
<td>4 Hours</td>
<td>Clamp-on Ultrasonic Flow Measurement</td>
</tr>
<tr>
<td>SEM-113</td>
<td>2 Hours</td>
<td>Mass Flow</td>
</tr>
<tr>
<td><strong>Pressure Measurement Seminar</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-120</td>
<td>2 Hours</td>
<td>Pressure Measurement</td>
</tr>
<tr>
<td><strong>Temperature Measurement Seminar</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-121</td>
<td>2 Hours</td>
<td>Temperature Measurement</td>
</tr>
<tr>
<td><strong>Weighing Technology Seminars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-130</td>
<td>4 Hours</td>
<td>Weighing Technology</td>
</tr>
<tr>
<td>SEM-131</td>
<td>2 Hours</td>
<td>Belt Scales</td>
</tr>
<tr>
<td><strong>Valve Positioner Seminars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-140</td>
<td>4 Hours</td>
<td>Valve Positioners</td>
</tr>
<tr>
<td>SEM-141</td>
<td>2 Hours</td>
<td>Cost of Air &amp; Carbon Footprint</td>
</tr>
<tr>
<td><strong>Communication Seminar</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEM-150</td>
<td>4 Hours</td>
<td>WirelessHART Technology</td>
</tr>
<tr>
<td><strong>Industry-Specific Seminars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IND-200</td>
<td>6 Hours</td>
<td>Water Systems</td>
</tr>
<tr>
<td>IND-300</td>
<td>6 Hours</td>
<td>Oil &amp; Gas Solutions</td>
</tr>
<tr>
<td>IND-400</td>
<td>6 Hours</td>
<td>Solutions for the Chemical Industry</td>
</tr>
<tr>
<td>*<em>Process Instrumentation Learning Center Courses (<em>CEU Approved)</em></em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIA-PRT5C1A</td>
<td>3 days</td>
<td>Field Instrumentation*</td>
</tr>
<tr>
<td>PIA-PRT1C1A</td>
<td>4 Days</td>
<td>Level Technologies*</td>
</tr>
<tr>
<td>PIA-PRT3C1A</td>
<td>3 Days</td>
<td>Flow Technologies*</td>
</tr>
<tr>
<td>PIA-PRFUGC1A</td>
<td>3 Days</td>
<td>SITRANS FUG1010 Clamp-On*</td>
</tr>
<tr>
<td>PIA-PRFUHC1A</td>
<td>3 Days</td>
<td>SITRANS FUH1010 &amp; Leak Detection*</td>
</tr>
<tr>
<td>PIA-PRFUEC1A</td>
<td>3 Days</td>
<td>SITRANS FUS/FUE1010 Clamp-On*</td>
</tr>
<tr>
<td>PI T-2</td>
<td>4 Days</td>
<td>Weighing and Feeding</td>
</tr>
<tr>
<td>PI T-6</td>
<td>3 Days</td>
<td>Essential HART Communication</td>
</tr>
<tr>
<td>PI A-6</td>
<td>5 Days</td>
<td>PROFIBUS PA Design</td>
</tr>
<tr>
<td>PI A-2</td>
<td>4 Days</td>
<td>Advanced Radar</td>
</tr>
<tr>
<td>PI A-1</td>
<td>3 Days</td>
<td>Advanced Ultrasonics</td>
</tr>
<tr>
<td>PI A-5</td>
<td>4 Days</td>
<td>Advanced Weighing and Feeding</td>
</tr>
</tbody>
</table>
Continuous Level Technology

Seminar #: SEM-100

Seminar Title: Continuous Level

Description:
Continuous Level Technology Seminar will give the audience an overview of level measurement options. This seminar includes application and installation considerations that are designed for trouble-free start-up and long-term operation. An overview of proven engineering practices will cover how to prevent accidents like overfill and dry pumps. This highly interactive session will allow attendees to discuss their challenging applications with instrumentation experts.

Duration: 6 Hours

Objective:

Participants will:

• Understand the theory of operation for ultrasonic, radar, continuous capacitance and pressure technologies, and how to apply these technologies to level measurement applications.

• Learn the best practices and installation considerations for level products.

• Learn how to determine interface measurement using guided wave radar and continuous capacitance.

• Learn how to obtain the best performance from tough applications.

• Be able to identify the right technology for applications.

• Know how to prevent overfill or material shortage with the use of back-up level measurement.

Outline:

• Theory of operation, installation considerations and application review for:
  – Ultrasonic level
  – Through air radar
  – Guided wave radar
  – Continuous Capacitance
  – Pressure

• How to prevent overfill and material shortages with point level instrumentation
Ultrasonic Level Technology

Seminar #: SEM-101
Seminar Title: Ultrasonic Level

Description:
This seminar provides focus on ultrasonic level technology. The session will give the audience an overview of ultrasonic level technology and how to use this technology in different applications like basic level, pump control and open-channel flow. Topics covered in this seminar will include theory of operation, application review, and installation considerations that will benefit the attendee in the start-up and operation of ultrasonic level instruments.

Duration: 3 Hours

Objective:
Participants will:
• Understand the theory of operation for ultrasonic level technology.
• Learn the best practices and installation considerations for deploying an ultrasonic level solution.
• Learn how to get the best performance from demanding applications.
• Know how to prevent overfill and material shortage with the use of back-up level measurement technologies.

Outline:
• Ultrasonic level theory of operation
• Installation considerations and applications in liquid and solids applications
• Review of ultrasonic level products
• How to prevent overfill and material shortages with point level instrumentation
Seminar #: SEM-102
Seminar Title: Non-Contacting Radar Level

Description:
With focus on radar level, this seminar will give the audience an overview of through air radar level technology and its applicability in liquid and solids level measurement applications. Topics will include the theory of operation, key applications and installation considerations that are designed to provide for trouble-free start-up and operation.

Duration: 4 Hours

Objective:

Participants will:
• Understand the theory of operation for non-contacting radar level technology.
• Learn the best practices and installation considerations for efficient and successful operation.
• Understand when and how to apply radar technology in liquid and solids level applications.
• Learn how to get the best performance from demanding applications.
• Learn how to prevent overfill and material shortage with the use of back-up level measurement techniques.

Outline:
• Radar level measurement theory of operation
• Radar level installation considerations and applications in liquid and solids applications
• Review of liquid and solid radar product offering
• Review point level solutions to help prevent overfill and material shortage
Seminar #: SEM-103

Seminar Title: Guided Wave Radar Level

Description:
This seminar focuses on guided wave radar level technology and will provide an overview of the theory of operation and applicability in level measurement. This seminar includes application and installation considerations, and proven engineering practices for use of guided wave radar technology.

Duration: 3 Hours

Objective:
Participants will:
• Understand the theory of operation for guided wave radar and when to apply this technology to level measurement in both solids and liquid applications.
• Learn how to determine interface level using guided wave radar.
• Learn about installation considerations for guided wave radar level products.
• Understand how to get the best performance from demanding applications.

Outline:
• Guided wave radar theory of operation
• Installation considerations and application review
• Guided wave radar product review
Continuous Capacitance Level Technology

Seminar #: SEM-104

Seminar Title: Continuous Capacitance Level

Description:
The Continuous Capacitance Level Seminar will give the audience an overview of continuous capacitance level technology and how to apply it. This seminar includes theory of operation, key applications and installation considerations. It also covers the unique aspects of Inverse Frequency™ and how it differs from classic continuous capacitance level measurement.

Duration: 2 Hours

Objective:
Participants will:

- Understand the theories of operation for continuous capacitance.
- Understand the best engineering practices and installation considerations for successful deployment and operation.
- Learn how to determine interface level using continuous capacitance.
- Know how to apply continuous capacitance technology for level measurement.
- Learn how to get the best performance from continuous capacitance level instruments.

Outline:

- Siemens Inverse Frequency™ continuous capacitance level theory of operation
- Installation considerations and application review
- Continuous capacitance level product review
Flow Technology

Seminar #: SEM-110

Seminar Title: Flow Technology

Description:
The Flow Technology Seminar will give the audience an overview of multiple flow technologies and how they are applied in various industries and applications. This seminar includes the theory of operation for magnetic, Coriolis, ultrasonic clamp-on, differential pressure and ultrasonic open-channel flow. This interactive seminar provides opportunities to ask questions throughout and is conducted by flow technology experts.

Duration: 6 Hours

Objective:

Participants will:

• Understand the fundamentals of flow meter theory for various flow meter technologies.
• Develop an understanding of flow products, common installation considerations and basic troubleshooting practices.
• Know where and how to use flow instruments, and how to pick the right technology for various applications.
• Review proven applications.

Outline:

• Flow technology alternatives and operating principles
• System hardware handling and set-up
• Installation considerations
• Successful applications
• Software uses and requirements
Magnetic Flow Technology

Seminar #: SEM-111
Seminar Title: Magnetic Flow

Description:
This seminar covers magnetic flow technology with in-depth detail of product and applications. Subject matter will cover how the sensors function, and what the features are for sensors and for transmitters. Application data, service and troubleshooting details will also be covered.

Duration: 2 Hours

Objective:
Participants will:
• Gain an understanding of fundamental magnetic flow meter theory and technology, and how it works.
• Develop a working understanding of magnetic flow product handling and set-up.
• Review key installation considerations for magnetic flow products.
• Learn where to apply magnetic flow technologies.
• Review troubleshooting, installation considerations, and maintenance of the sensor and transmitter.

Outline:
• Flow meter theory, product overview, typical applications, installation, configuration and calibration
• Product component overview of the sensor and transmitter
• Proper applications for magnetic flow sensors and operation considerations
• Sensor troubleshooting and how to overcome common issues
Seminar #: SEM-112
Seminar Title: Clamp-On Ultrasonic Flow Measurement

Description:
This seminar covers clamp-on transit-time and Doppler flow technology with in-depth detail of product and applications. Subject matter will cover how the sensors function, and what transmitters and features are available. Application data, service and troubleshooting details will also be covered.

Duration: 4 Hours

Objective:
Participants will:

- Gain an understanding of the theory of operation for clamp-on ultrasonic flow transit-time and Doppler technologies.
- Learn about the installation considerations and applications for ultrasonic clamp-on flow products.
- Learn appropriate applications for clamp-on ultrasonic flow products.
- Review products available for clamp-on ultrasonic flow.

Outline:
- Fundamental clamp-on flow meter theory
- System hardware:
  - Flow meter models and specs
  - Sensor types and utilization
  - Sensor mounting hardware
- Installation considerations:
  - Sensor mounting methods
  - Sensor location
  - Straight run requirements
  - Pipe configuration tool
- Applications in various industries
- Software (PC and iOS)
Mass Flow Technology

Seminar #: SEM-113

Seminar Title: Mass Flow

Description:
The objective of this seminar is to give the audience a basic technical overview and understanding of Coriolis flow technologies. The class will cover operational theory, installation considerations and applications, and where and how they should be applied.

Duration: 2 Hours

Objective:
Participants will:
• Gain an understanding of fundamental Coriolis flow meter theory and technology, and how it works.
• Develop a working understanding of Coriolis product handling and set-up.
• Review key installation considerations for Coriolis flow products.
• Learn where to apply Coriolis flow technologies.

Outline:
• Flow meter theory, product overview, typical applications, installation, configuration and calibration
• Product component overview of sensors and transmitters
• Sensor troubleshooting and how to overcome common issues
Seminar #: SEM-120
Seminar Title: Pressure Measurement

Description:
The objective of this seminar is to give the audience a basic technical understanding of pressure technologies. The class will cover operational theory, installation considerations, and applications of the various types of Siemens pressure transmitter configurations and where they can be applied.

Duration: 2 Hours

Objective:
Participants will:
• Gain an understanding of fundamental pressure theory and technology.
• Develop a working understanding of pressure handling and set-up.
• Review key installation considerations for various pressure products.
• Learn appropriate applications for particular pressure technologies.
• Spend time with hands-on programming and hardware set-up.

Outline:
• Pressure theory, product overview, typical applications, installation, configuration and calibration
• Typical remote seal applications
• Typical flow applications
• Typical level applications
Temperature Measurement

Seminar #: SEM-121
Seminar Title: Temperature Measurement

Description:
The objective of this seminar is to give the audience a basic technical understanding of process temperature technologies. The class will cover operational theory, installation considerations, and applications of Siemens temperature, transmitter, and sensor configurations and where they can be applied.

Duration: 2 Hours

Objective:
Participants will:
• Gain an understanding of fundamental temperature theory and technology.
• Develop a working understanding of temperature handling and set-up.
• Review key installation considerations for various temperature products.
• Learn appropriate applications for particular temperature technologies.
• Spend time with hands-on programming and hardware set-up.

Outline:
• Temperature theory, product overview, typical applications, installation, configuration and calibration
• Typical temperature transmitter applications
• Typical Resistance Temperature Detector (RTD) applications
• Typical thermocouple applications
Weighing Technology

Seminar #: SEM-130

Seminar Title: Weighing Technology

Description:
This seminar will provide a basic overview of the principles of operation, application and set-up for belt scales, solids flow meters, weighfeeders, and process protection products. In addition to maintenance considerations, this seminar will also cover proven configuration and calibration techniques. Taught by field experts, this session is interactive with demonstration equipment available for hands-on experience.

Duration: 4 Hours

Objective:
Participants will:
• Gain a basic understanding of how Siemens weighing and process protection products operate.
• Understand installation and maintenance considerations for belt scales.
• Learn the processes of how to configure and calibrate a belt scale.
• Know how to get the most out of weighing and process protection equipment.

Outline:
• Theory, product overview and typical applications for:
  – Solids Flow Meters
  – Weighfeeders
  – Motion Sensing
  – Acoustic Sensing
Belt Scales

Seminar #: SEM-131
Seminar Title: Belt Scales

Description:
This seminar discusses proven configuration and maintenance techniques for belt scales. Additionally, the seminar will cover belt scale operation, conveyor considerations when installing belt scales, and key applications. Attendees will have the opportunity to work with the equipment and discuss their challenging applications with dynamic weighing experts.

Duration: 2 Hours

Objective:
Participants will:
• Gain a basic understanding of how belt scales work.
• Understand installation and maintenance considerations for belt scales.
• Learn the processes for configuring and calibrating a Siemens belt scale.
• Learn where to use Siemens belt scales.

Outline:
• Belt scale theory of operation
• Conveyor considerations when applying a belt scale
• Belt scale installation
• Configuration and calibration of a Siemens belt scale
• Belt scale maintenance
• Siemens belt scale product offering
Valve Positioners

Seminar #: SEM-140
Seminar Title: Valve Positioners
Description:
The Valve Positioner Technology Seminar will give the audience an overview of the digital positioner and its operation. The seminar will demonstrate how the features of the positioner are used to reduce plant-air consumption, product inventory and carbon footprint, all while improving valve reliability.
Duration: 4 Hours

Objective:
Participants will:
• Gain an understanding of what a valve positioner is and how it operates.
• Learn how to identify applications for digital positioners.
• Develop an understanding of the installation and operational procedures for digital positioners.
• Discover how a Siemens digital positioner can save a plant thousands of dollars a year through reduced air consumption and reduced product inventory.

Outline:
• How a valve positioner works
• Interactive hardware handling and set-up
• Installation considerations
• Applications in various industries
• Cost of air and inventory reduction discussion
Cost of Air & Carbon Footprint

Seminar #: SEM-141

Seminar Title: Cost of Air & Carbon Footprint

Description:
The Cost of Air & Carbon Footprint Seminar will give the audience an overview of air consumption in a plant. The seminar demonstrates how to calculate air losses in a plant and how to convert them into a monetary value. The seminar will also show how to reduce air consumption by using a Siemens PS2 Smart Valve Positioner.

Duration: 2 Hours

Objective:
Participants will:
• Gain an understanding of where plant-air leaks occur.
• Learn how to calculate the cost of plant-air leaks as well as the efficiency of their plant’s air compressor system.
• Develop an understanding of what a valve positioner is, and how it operates.
• Discover how a Siemens PS2 Digital Positioner can save a plant thousands of dollars a year through reduced air consumption.

Outline:
• Typical areas of plant-air consumption and loss
• Interactive efficiency calculations
• Standard valve positioners versus Siemens PS2
• Cost of plant-air discussion
WirelessHART Technology

Seminar #: SEM-150
Seminar Title: Wireless HART

Description:
This seminar will present how WirelessHART can be used in various applications and with multiple technologies. The objective of this seminar is to give the audience a basic technical understanding of WirelessHART. The class will cover installation considerations, the various types of Siemens WirelessHART configurations and where they can be applied.

Duration: 4 Hours

Objective:
Participants will:

• Gain an understanding of fundamental WirelessHART theory and technology.
• Develop a working understanding of WirelessHART handling and set-up.
• Review key installation considerations for various WirelessHART products.
• Learn appropriate applications for particular WirelessHART technologies.
• Spend time with hands-on programming and hardware set-up.

Outline:

• WirelessHART theory, product overview, typical applications, installation, configuration and calibration
• Typical gateway applications
• Typical adapter applications
• Typical WirelessHART transmitter applications
Seminar #: IND-200

Seminar Title: Water Systems

Description:
This seminar will give the audience an overview of the different instrumentation and technologies that are used throughout the clean and wastewater system. Technologies such as flow, level, pressure and temperature will be discussed. Basic theories of operation, key applications, and basic installation and commissioning will be covered. This seminar is highly interactive and will be conducted by technology experts.

Duration: 6 Hours

Objective:
Participants will:
• Gain an understanding of the various technologies and theories of operation for level, pressure, flow and temperature products.
• Learn basic installation and best practices to help ensure trouble-free start-up and long-term operation.
• See real-world applications and how instrumentation can help to improve system operation.
• Have the opportunity to interact with industry experts who will answer questions on various technologies and products.

Outline:
• Basic Technology review:
  – Level, Pressure, Temperature and Flow Technologies
• Review of the Waste Water System Map
  – Applications Review and Proper Technology selection for that application
  – Application Challenges and how to overcome them
  – Application Installation Considerations
• Review of the Clean Water System Map
  – Applications Review and Proper Technology selection for that application
  – Application Challenges and how to overcome them
  – Application Installation Considerations
• Hands-on and Product Demonstration
  – Level, Pressure, Flow products
Oil & Gas Solutions

**Seminar #:** IND-300  
**Seminar Title:** Oil & Gas Solutions  
**Description:**  
This course will provide the audience with technical knowledge required to specify, apply, and install process instruments utilized on upstream and midstream Oil & Gas applications. Flow, level, pressure, temperature and valve positioner technologies will be discussed during this course. This course will cover basic theory of operation, applications, and installation and commissioning considerations.  
**Duration:** 6 Hours

**Objective:**  
**Participants will:**  
- Gain an understanding of the various technologies and configurations, and how they can be applied.  
- Learn basic installation and best practices to help ensure trouble-free start-up and long-term operation.  
- Have the opportunity to interact with industry experts who will answer questions on the various technologies and applications.  
- Have an opportunity to work with live demonstration units to further enhance their learning experience.

**Outline:**  
- Review of the various technologies and product offerings  
- Instrumentation configurations  
- Applications and installation considerations  
- Diagnostics and troubleshooting  
- Hands-on and product demonstration
Solutions for the Chemical Industry

Seminar #: IND-400
Seminar Title: Solutions for the Chemical Industry

Description:
This seminar will provide the audience the technical and application knowledge to choose, install and configure process instruments in chemical applications. During this session, users will learn how to correctly implement solutions in simple and extreme requirements inherent in the Chemical Industry. The seminar will focus on radar, guided wave radar, pressure, flow, temperature and valve positioner technologies. The attendees will learn the basic theory of operation of the various technologies, their applicability and best installations practices to maintain an efficient and trouble free process.

Duration: 6 Hours

Objective:
Participants will:
• Gain an understanding of the various technologies and configurations, and how they can be applied.
• Learn best installation practices to ensure proper operation from the initial commissioning.
• Understand how to best apply process instrumentation by reviewing real world examples. They will also have the opportunity to interact with industry experts who will answer questions on the various technologies and applications.
• Have an opportunity to work with live demonstration instruments to further enhance their learning experience

Outline:
• Review of radar, guided wave radar, pressure, flow, temperature and valve positioner technologies
• Application and installation considerations
• Configuration guidelines
• Diagnostics and troubleshooting
• Product demonstration and hands-on
Want comprehensive training that also offers Continuing Education Units (CEUs)?

Siemens Process Instrumentation hosts a wide array of topics, including pressure, temperature, level, valve positioners, loop controllers, flow, weighing and industrial communications. Courses are offered several times a year and, with five North American learning centers focused on instrumentation training, you can pick the time and place that is best for you.

Walk away an expert

Our courses link the classroom to the real world by utilizing the latest hardware, software and proven educational experiences. Each course includes the following learning techniques:

- **Tutorial:** Instructors provide background information that is critical to understanding the instruments.
- **Demonstration:** Instructors demonstrate equipment displays and cover the theory of operation and applications for each technology.
- **Hands-on:** Students spend 30-50% of class time with the equipment and learn how to effectively operate the products.
- **Class size:** Class size is limited in order to maximize personal attention and interaction between the instructor and participants.

All US training courses are approved for CEUs.

Gain advanced expertise and visit the factory!

Visit a global manufacturing center in North America. Some of our courses are offered at our manufacturing center in Peterborough, Ontario.
Course #: PIA-PRT5C1A
Course #: PI T-5 (for Peterborough, ON)
CEU Credits: 2.1

Course Title: Field Instrumentation

Description:
Combining hands-on tutorials with theory sessions, this course teaches participants the principles of field instrumentation, including pressure and temperature measurement and electro-pneumatic valve positioners. Working with the PI product portfolio, students gain an understanding of common applications, troubleshooting, and how to select a suitable product.

Duration: 3 Days

Objective:
Participants will:
• Gain an understanding of the principles and theory of operation for pressure, temperature and valve positioner technologies.
• Learn troubleshooting techniques to help with long-term operation.
• Understand how to apply the various technologies and common applications.
• Experience hands-on programming with Siemens instruments, including initial set-up and commissioning.
• Gain an understanding of the principles of pressure references, including absolute, gauge and differential.

Outline:
• Pressure:
  – Introduction to principles and technology
  – Programming
  – Common applications
  – Pressure transmitter portfolio and design
  – Maintenance and troubleshooting
• Temperature:
  – Introduction to principles and technology
  – Temperature transmitter portfolio and design
  – Programming
  – Maintenance and troubleshooting
• Valve Positioners:
  – Introduction to valve and valve positioner technology
  – Programming and initialization
  – Maintenance and troubleshooting
  – Advanced diagnostics
Course #: PIA-PRT1C1A
Course #: PI T-1 (for Peterborough, ON)
CEU Credits: 2.8
Course Title: Level Technologies

Description:
Combining hands-on tutorials with theory sessions, this course teaches participants the principles of solids and liquid level measurement using the Siemens Process Instrumentation ultrasonic, radar, capacitance, guided wave radar and point level detection technologies. Covering product lines and common applications, participants learn the basics of point and continuous level measurement, product features, product selection, and troubleshooting.

Duration: 4 Days
Objective:
Participants will:
- Gain an understanding of the measuring principles for contacting and non-contacting level instrumentation.
- Obtain and understand the principle of operation, selection of sizing, and basic programming for ultrasonic, radar, guided wave radar, pressure, and capacitance.
- Acquire an understanding of when and how to apply each technology to a specific application in order to give the application the best chance of being successful.
- Acquire knowledge of industrial communication instruments and software to remotely monitor applications.

Outline:
- Ultrasonics:
  - Theory of operation
  - Applications, programming and installation basics
  - Support Software
- Non-Contacting Microwave Radar:
  - Theory of operation
  - Pulse, FMCW, 2-wire
  - Power, Frequency, Cost
  - SIMATIC PDM
  - Applications and installation basics
- Guided Wave Radar:
  - Theory of operation
  - Applications and installation details
- Capacitance
  - Theory of operation
  - Applications
Flow Technologies

Course #: PIA-PRT3C1A
Course #: PI T-3 (for Peterborough, ON)

CEU Credits: 2.1

Course Title: Flow Technologies

Description:
Using hands-on tutorials and theory sessions, this course gives participants an overview of several flow measurement technologies using the Siemens Process Instrumentation coriolis mass flow, electromagnetic volume flow, vortex flow measurement and ultrasonic flow measurement technologies. Covering commonly used flow product lines and common applications, participants learn the principles of flow measurement, product features, product selection, and basic troubleshooting of applications and installations.

Duration: 3 Days

Objective:
Participants will:
• Learn the principles of flow measurement.
• Review commonly used flow technologies and common applications.
• Explore product features and selection of flow technology based on application requirements.
• Learn basic troubleshooting of applications and installations.

Outline:
• Introduction to flow measurement and why it is a critical process variable
• Theory, history and terminology
• Flow markets and key applications
• Working principles, installation, commissioning, common errors and unique benefits of:
  – Coriolis flow meters
  – Electromagnetic flow meters
  – Ultrasonic flow meters: transit-time and Doppler
  – Vortex flow meters
• Product selection by application
• Installation guidelines
• Hands-on exercises on each type of technology presented
Course #: PIA-PRFUGC1A

Course Title: SITRANS FUG1010 Clamp-On Products

Description:
Combining hands-on tutorials with theory sessions, this course teaches participants the configuration and application details of the SITRANS FUG1010 product line as it relates to the gas industry. This course is an advanced course with focus on the FUG product. Additionally, the course covers many of the applications for the products as well as installation and troubleshooting.

Duration: 3 Days

Objective:
Participants will learn:
• Principles of transit-time clamp-on flow meters for the gas industry.
• Programming fundamentals, requirements, and options.
• Installation requirements and procedures.
• Commissioning and verification.
• Troubleshooting and corrective action.
• Utilization of supporting diagnostic software and tools.
• Communication options.

Outline:
• Model selection and part numbering
• Fundamental theory and application considerations
• Programming techniques
• Installation methods and guidelines
• Hands-on installation exercises
• Construction and loading of AGA8 tables
• Basic troubleshooting
• Use of Si-Ware® serial data software
Course #: PIA-PRFUHC1A

CEU Credits: 2.1

Course Title: SITRANS FUH1010 & Leak Detection

Description:
Combining hands-on tutorials with theory sessions, this course teaches participants the configuration and application details of the SITRANS FUH1010 and Leak Detection product line as it relates to the Hydrocarbon Liquid industry. This course is an advanced course with focus on the FUH product and leak detection designs. Additionally, the course covers many of the applications for the products as well as installation and troubleshooting.

Duration: 3 Days

Objective:
Participants will learn:
- Principles of transit-time clamp-on flow meters for the Hydrocarbon industry.
- Programming fundamentals, requirements, and optimization.
- Installation requirements and procedures.
- Commissioning and verification.
- Troubleshooting and corrective action.
- Utilization of supporting diagnostic software and tools.
- Communication options.

Outline:
- Theory and application considerations
- Installation methods, requirements and guidelines
- Detailed analysis of diagnostic data
- Enhanced application troubleshooting
- Construction and Programming liquid tables
- Assessment and correction of operational issues and communications
- Use of Si-Ware® serial data software
Course #: PIA-PRFUEC1A
CEU Credits: 2.1
Course Title: SITRANS FUS/FUE1010 Clamp-On Products
Description:
Combining hands-on tutorials with theory sessions, this course teaches participants the configuration details of the products in the FUS/FUE product line. Additionally, the course covers many of the applications for the products as well as installation and troubleshooting.
Duration: 3 Days

Objective:
Participants will learn:
• Principles of transit-time and Doppler clamp-on flow meters for liquids.
• Programming fundamentals, requirements, and options.
• Installation requirements and procedures.
• Commissioning and verification.
• Troubleshooting and corrective action.
• Utilization of supporting diagnostic software and tools.
• Communication options.

Outline:
• Model selection and part numbering
• Fundamental theory and application considerations
• Programming techniques
• Installation methods and guidelines
• Hands-on installation exercises
• Basic troubleshooting
• Use of Si-Ware® serial data software
Weighing and Feeding

Course #: PI T-2

Course Title: Weighing and Feeding

Location: Peterborough, Ontario

Description:
Mixing hands-on tutorials with theory sessions, this course instructs participants on the theory and principles of weighing and feeding technology using SIWAREX weighing components and belt scales, weighfeeders, solids flow meters, and integrators. Covering product lines and common applications, participants learn principles of installation and operation, product features, product selection, understanding and meeting process requirements, and troubleshooting.

Duration: 4 Days

Objective:

Participants will:

• Learn the theory of operation for belt scales, weighfeeders and solids flow meters.
• Explore common applications.
• Review installation considerations and troubleshooting for the various technologies.

Outline:

• Integrators:
  – Types and applications
  – Communication and programming tools
• Load cells:
  – Types and applications
• Belt scales:
  – Types and applications
  – Installation
  – Maintenance and troubleshooting
• Weighfeeders:
  – Types and applications
  – Installation
• Flow meters:
  – Types and applications
  – Installation
• Process protection:
  – Introduction to motion and acoustic monitoring
• Assessment and certificate
Essential HART Communication

Course #: PI T-6
Course Title: Essential HART Communication
Location: Peterborough, Ontario

Description:
Do you experience problems when using SIMATIC PDM or PACTware to communicate with HART instruments? Then this is the course for you. Employing hands-on tutorials and theory sessions, this course provides students an overview of HART, SIMATIC PDM and PACTware. A brief introduction to WirelessHART is also included.

Duration: 3 Days

Objective:
Participants will:
• Learn how to use SIMATIC PDM and PACTware efficiently.
• Gain the knowledge to trouble shoot HART communication issues.
• Learn how to use WirelessHART.
• Learn how to use HART over IP.

Outline:
• Introduction to HART
• Introduction to WirelessHART
• Overview of SIMATIC PDM and PACTware, including how to install and operate
• Getting device data via HART
• HART diagnostics
• Remote HART communications via Ethernet, PROFIBUS and Modbus
• Assessment
PROFIBUS PA Design
(Certified by PROFIBUS and PROFINET INTERNATIONAL)

Course #: PI A-6
Course Title: PROFIBUS PA Design (Certified by PROFIBUS and PROFINET INTERNATIONAL)
Location: Peterborough, Ontario
Prerequisite: PI T-6 Essential HART Communications or equivalent PROFIBUS knowledge

Description:
Design your own network, practice installation methods and apply advanced troubleshooting tools. With a mixture of hands-on labs and written assignments, this advanced course focuses on design, installation and network troubleshooting. Upon completion, students are able to successfully complete a PROFIBUS PA project. Engineers who complete this training are awarded certified engineer status by PROFIBUS & PROFINET International.

Duration: 5 Days

Objective:
Participants will:
• Learn to design, install and troubleshoot a PROFIBUS network.
• Gain the hands-on experience to wire a PROFIBUS network.
• Know how to apply advanced troubleshooting tools to a PROFIBUS network.
• Understand the differences between a PROFIBUS DP and PROFIBUS PA network, and know when and where to apply each.

Outline:
• Overview of PROFIBUS components
• PROFIBUS DP design rules
• PROFIBUS PA design rules
• Design examples and labs
• Installation best practices
• Commissioning best practices
• Plant asset management
• PROFIBUS troubleshooting
• How to use a bus monitor
• Hands-on troubleshooting
Advanced Radar

Course #: PI A-2

Course Title: Advanced Radar

Location: Peterborough, Ontario

Prerequisite: PIA-PRT1C1A or PI T-1 Level Measurement

Description:
Applying the knowledge from the PI T-1 Level course, students learn advanced radar installation, programming and troubleshooting skills. Using a combination of theory and hands-on labs, students have the opportunity to work with the complete radar instrumentation line, including Probe LR, LR200, LR250, LR260, LR560 and LG series. Participants also learn how to assess and solve issues, and how to specify custom installations.

Duration: 4 Days

Objective:

Participants will:
• Learn successful installation practices.
• Gain strong configuration skills.
• Learn troubleshooting skills for radar applications.
• Be familiar with all of Siemens’ radar instruments.
• Learn programming and programming methods for Siemens radar instruments.
• Have the ability to specify the best Siemens radar for specific applications.

Outline:
• Market and applications for radar
• Frequency and technology selection
• Antenna selection
• How to handle low dielectric media, foam and deposit
• Proper installation techniques
• Process connections and accessories
• Programming and commissioning
• SIMATIC PDM and SuperSonex diagnostic tools
• SITRANS DTM/Pactware
• mA loop, HART, PROFIBUS PA
• Antenna calibration
• Advanced troubleshooting
Advanced Ultrasonics

Course #: PI A-1
Course Title: Advanced Ultrasonics
Location: Peterborough, Ontario
Prerequisite: PIA-PRT1C1A or PI T-1 Level Measurement

Description:
Building on the ultrasonic skills obtained from our PI T-1 Level course, this course teaches participants advanced ultrasonic applications, including installation, troubleshooting and programming. In addition to theory, participants simulate real-life applications and troubleshoot in our hands-on classroom, while working with the actual ultrasonic instruments that are used in the field.

Duration: 3 Days
Objective:
Participants will:
• Gain an understanding of advanced ultrasonic applications.
• Obtain troubleshooting skills for Siemens’ ultrasonic equipment.
• Procure an understanding, both theoretically and practically, of advanced programming for Siemens’ ultrasonic instruments.

Outline:
• Assessing an installation
• Vessel types, roof and bottom style, vessel contents’ effect on signal, and temperature and pressure internal obstructions
• Selecting the proper configuration for an application
• Reference guide for parameter settings for different materials (flour, aggregates, liquids, sugar, pellets)
• Solving problems on-site
• Correct installation and mounting techniques
• Open channel flow applications, types of flumes and weirs
• Process connections and accessories
• Advanced programming
• How to read echo profiles
• Diagnostic tools - SuperSonex, SIMATIC PDM web browser, DTM for FDTs
• Assessment for certificate
Advanced Weighing and Feeding

Course #: PI A-5
Course Title: Advanced Weighing and Feeding
Location: Peterborough, Ontario
Prerequisite: PI T-2 Weighing and Feeding

Description:
Blending theory and hands-on labs while using the complete weighing and feeding product line, participants enhance their skills from the introductory weighing course. Students learn how to assess and solve advanced issues, and how to specify custom installations.

Duration: 4 Days

Objective:
Participants will:
• Learn successful installation practices.
• Learn programming and troubleshooting with Siemens integrator.
• Learn troubleshooting skills for belt scale, solids flow meter and weighfeeder applications.
• Have the ability to change a load cell on a Siemens belt scale.
• Become familiar with Siemens Siwarex models and set-up.
• Be able to commission belt scales, flow meters and weighfeeders.
• Have the ability to specify the best weighing technology for many applications.
• Have the ability to change the inner and outer gasket on a Siemens solids flow meter.

Outline:
• Electronics
  – Configuration software
  – Advanced functionality
  – Maintenance and advanced Troubleshooting Belt Scales
• Weighfeeders
  – Types, applications, and design
  – Application engineering
  – Maintenance, advanced troubleshooting, and repair
• Flow meters
  – Types, applications and design
  – Application engineering
  – Maintenance, advanced troubleshooting, and repair
Comprehensive Instrumentation Portfolio

Siemens offers a comprehensive range of process instrumentation for pressure, temperature, flow and level measurement. Pneumatic valve positioners, process recorders, and process protection devices – in addition to weighing technology – complete the package. Whether you need a single transmitter or a complete instrumentation package, Siemens has the technical expertise for your project.

Service and Support: your partner for success

Siemens backs up every instrument with top-of-the-line service and support, including:

• 24/7 technical support
• Field Service personnel with years of experience
• A Quick Ship program for fast replacement of instruments
• State-of-the-art training facilities and CEU credits

More information:
usa.siemens.com/pitraining

Follow us:
facebook.com/siemens.ia.us
twitter.com/usautomation
youtube.com/siemens
https://blogs.siemens.com/measuringsuccess