




SIEMENS



Siemens Process Instrumentation  
Education Program

Course Catalog

[usa.siemens.com/pi](http://usa.siemens.com/pi)

Answers for industry.



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# 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](http://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](http://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

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

# 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 overflow 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 overflow 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 overflow 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 overflow 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 overflow and material shortages with point level instrumentation



# Non-contacting Radar Level Technology

**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 overflow 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 overflow and material shortage



# Guided Wave Radar Level Technology

**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



# Clamp-On Ultrasonic Flow Measurement

**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

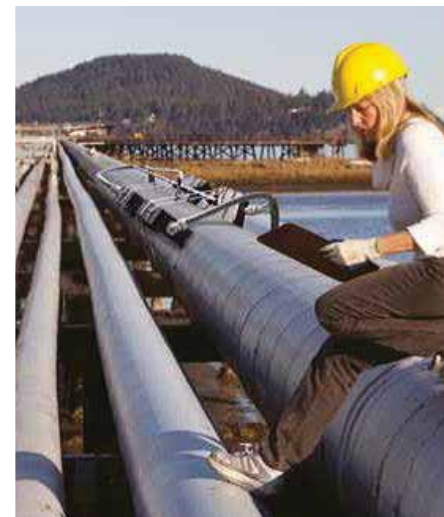
**Objective:**

**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 meter 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



# Pressure Measurement

**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

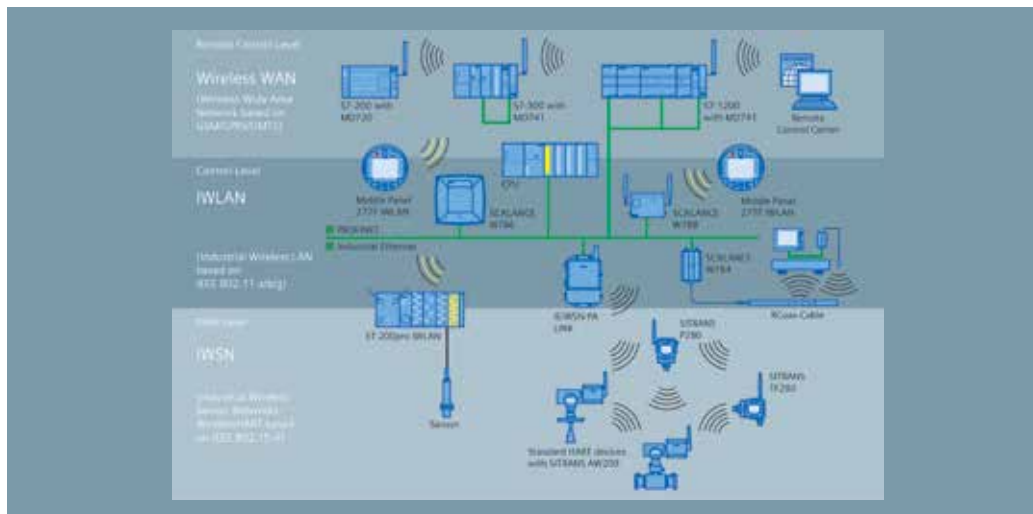
**Objective:**

**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



# Industry Seminars

## Water Systems

**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



# Process Instrumentation Learning Center

## 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.

# Field Instrumentation

**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



# Level Technologies

**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



# SITRANS FUG1010 Clamp-On Products

**Course #:** PIA-PRFUGC1A

**CEU Credits:** 2.1

**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



# SITRANS FUH1010 & Leak Detection

**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



# SITRANS FUS/FUE1010 Clamp-On Products

**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

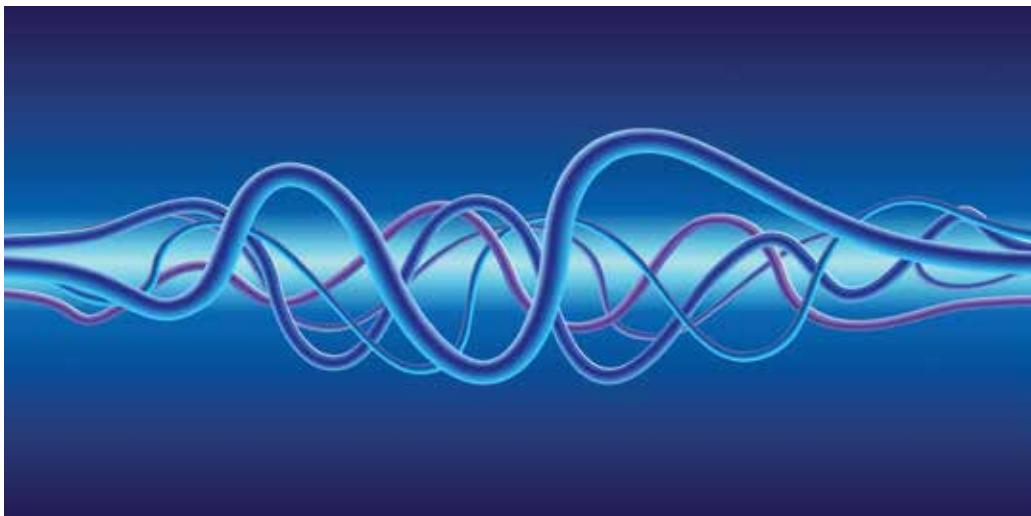
## **Objective:**

### **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, DTMs 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
  - Types, applications, and design
  - Application engineering
  - Maintenance, advanced troubleshooting, and repair
- 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



# Notes

# Notes

# Notes

## 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

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