EMERSON

EDUCATIONAL SERVICES

2026 Middle East & Africa Training Offerings

BUILD A SMARTER, STRONGER WORKFORCE

TABLE OF CONTENTS

Empower Your People with the Skills They Need to Succeed

Companies are investing in new products and technologies to improve performance and create value. With these advancements comes the added challenge of retaining and training the people needed to unlock the full potential of those investments.

Ensuring your workforce has the skills needed to meet your business goals is critical to any successful operation. By giving employees the knowledge and skills they need to succeed, you can help to keep them engaged while improving your organization's ability to meet performance targets.

You want to develop and retain the kind of capable, experienced workers you need to maximize performance, now and in the future. Here's how Emerson's Training Services can help.

IMPROVING SKILLS OPTIMIZES PERFORMANCE

Across four key technology functions, **only 1 in 10 organizations** was found to have the skills needed to be successful.[1]

71% of CEOs identified human capital as a key source of sustained economic value.[2]

84% of employees in top-performing organizations are receiving the training they need.[3]

1 The 2012 IBM Tech Trends Report, Fast Track to the Future.

2 According to our Industry

3 IBM Smarter Workforce Survey, 2013.

Keep Pace with Evolving Technologies

Advancements in technology happen quickly, with a high degree of complexity. Companies that fail to continually enhance their process technology skills—and effectively adapt work processes to keep pace with new technologies—risk lagging behind. Our experts equip technicians and engineers across industries with the practical knowledge they need to do their jobs well.

Develop and Retain a Capable Workforce

To ensure your employees are qualified to help your organization reach its full potential, Emerson provides higher education training opportunities all over the world to develop your workforce through advanced automation courses.

Customizable, Scalable Training Solutions

Learn from industry leaders in a format that works for you

- **Online** at your own pace
- **On-site** at an Emerson office or at your facility
- **Customized** to address your specific needs
- **Virtual** led by a live instructor online

1 Deloitte U.S. Manufacturing Industry Outlook, 2022 (https: / / www2.deloitte.com / content / dam / Deloitte / us / Documents / energy-resources / us-2022-manufacturing-industry-outlook.pdf)

Emerson Training Solution

STANDARD
Out-of-the-box training courses that covers configuration, implementation, IT-related and hardware resources

ROLE-BASED TRAINING
Learning paths available for various job roles

CUSTOMIZED COURSES
Customers can choose topics that suit their requirements

TRAINING CAN ALSO BE DELIVERED IN DIFFERENT MODALITIES
Face-to-face, Virtual, eCourses, etc.

COMPETENCY DEVELOPMENT PROGRAM
Partner with customer to assess the skills gap and plan a learning path

CUSTOMIZE CURRICULUM TO MEET YOUR SPECIFIC NEEDS

Find the right combination of training solutions to best suit operational needs

Ensure learning retention through adaptive and student-centered learning paths

Evaluate and develop competencies in alignment with specific business needs

Receive comprehensive training on Emerson's portfolio of technology

SOLUTIONS	DESCRIPTION	BENEFITS
ON-SITE		
Emerson Training Center	• Ask questions, meet in person, and get direct access to our experts • Traditional classroom-based learning	• Offices strategically located around the world
On-site, Local Training	• Learn through hands-on experiences, addressing both practical and theoretical scenarios at your location	• Training delivered to you. • Interact with our products and experts on site
ONLINE		
eCourses	• Online self-led courses, which allows you to learn at your own pace and schedule	• Self-paced • Reasonable costs • Access to library of offerings
Digital Classroom	• Virtual training that delivers real time value • Get a live classroom experience with the convenience of remote accessibility	• Convenient training schedule • Train in an environment that works best for your team
Blended Learning	• Contemporary approach to training that “blends” different teaching methods and deploys them via digital and online media	• Convenient & Flexible to create customized competency development programs • Leverages web technologies • Lowers overall training costs

Competency Development Programs

As your education partner, Emerson will work with you to assess the skills gap and plan a learning path for your employees. We help develop training programs based on job roles and specific core job tasks by personas and competencies. Our Experts :

- Assess the competency levels or use the existing skills gap
- Plan the training programs deliverables and milestone
- Implement the training program as per plan
- Review the progress and future roadmap

Emerson will help you identify the proper training and guide your employees to the appropriate delivery means to perfectly match your needs. After completion of training, students can stay in touch with their instructors regarding the real life problems they face being on site.

TRADITIONAL TRAINING VS COMPETENCY DEVELOPMENT

Ahmed S.
PLANT MANAGER

Traditional Training

- Train when new technologies are added
- Send people for training when schedule allows
- Availability of training takes preference over need
- Lengthy process to onboard new employees

Meera N.
PLANT MANAGER

Competency Development

- Developed a long-term training plan based on courses for a specific job
- Access to courses that are relevant to installation
- Track effectiveness with pre / post assessments
- Advanced onboarding process

What Customers say about our Trainings

> It was a very pleasant experience, and the classroom facilities were excellent. The instructors helped deliver the topics in a very clear and simplified manner.
>
> TEAM LEADER IN THE OIL AND GAS INDUSTRY

> The material was good. I needed the review of the PID, the instructor explained it in a way that really helped me to understand it much better that I previously did.
>
> MAINTENANCE ENGINEER IN THE PETROCHEMICAL INDUSTRY

> The training exceeded my expectations. I wanted information on sizing control valves and I got that plus, much other useful information.
>
> OPERATIONS / PRODUCTION WORKER IN THE REFINING INDUSTRY

> We did a virtual-hybrid training which was a very good experience. The functional safety training was a third-party training, but we chose to go with Emerson because of their delivery tools.
>
> LEAD INSTRUMENT & PROTECTIVE SYSTEMS ENGINEER IN THE OIL & GAS INDUSTRY

> Emerson was easily customizing our requirements without complicating things. What I liked about Emerson was how they welcomed our employees with their hospitality, which made the employees feel comfortable.
>
> INSTRUMENT MAINTENANCE ENGINEER IN THE OIL AND GAS INDUSTRY

Middle East & Africa Training Locations

We hope you will invite Emerson to instill confidence in your personnel and develop the capabilities of your workforce. We will guide them to be interested in potential solutions — ready to move your facility to greater efficiency and profitability.

Whether for a new project or for ongoing operations and maintenance, Emerson provides consulting services, skills assessments and the right training solutions at the right time.

- Project consultants identify targeted business results where training solution can improve plant operations. A skills assessment identifies skills gaps that can be addressed with training and prescribes the proper training solution.
- Your staff will be prepared when your project comes on line and throughout continuing operations and maintenance.

Across the world over several decades, Emerson has developed and dedicated substantial resources to training operators, engineers, technicians and maintenance personnel. We are ready for you anywhere and anytime.

- U.A.E.
- Saudi Arabia
- Qatar
- Nigeria
- Angola
- Kuwait
- Oman

CONTROL AND SAFETY SYSTEMS

Systems and Software Education Center

Systems and Software Education Center is a multipurpose classroom that offers face to-face and Virtual Training for students that enroll in courses to support job functions of Control Systems Engineer, I&E Maintenance, Batch Operator, Continuous Control Operator and more.

KEY FEATURES

- Can accommodate up to 10 students and 10 live demos
- Equipped with state-of-the-art technology to provide best classroom and Virtual training experience
- Customizable hands-on training
- Objective-based learning with Workshops
- Delivered in Local Languages
- Covers complete Systems and Software course offerings and product portfolio

COURSE OFFERINGS AVAILABLE:

- IACET compliant Emerson Standard Courses
- DeltaV, Ovation, Reliability and Remote Automation Solutions Courses that fall under DCS & SCADA
- Competency Development Programs

OPPORTUNITIES:

- Tailor Made courses to meet your requirements
- Hands-on experiences with supporting workshops
- Provides practical application skills with dedicated hardware at the Education Center

DeltaV Learning Path

This architecture is designed to take full advantage of the communications capabilities of the FOUNDATION™ fieldbus technology and its capacity for the open, continuous communication of large volumes of digital information generated by intelligent field devices. This information is accessed by the AMS Device Manager software and used for a variety of time and money-saving functions. The DeltaV™ Digital Automation System serves as an ideal automation system host in this environment.

CONTROL SYSTEM ENGINEER

- 7009 DeltaV™ Operate Implementation I
- 7409 DeltaV Implementation using DeltaV Live Introduction
- 7016 DeltaV™ Batch Implementation
- 7201 DeltaV™ Advanced
- 7202 DeltaV™ Model Predictive Control
- 7017 DeltaV™ Implementations II
- 7025 DeltaV™ Advanced Graphics
- 7425 DeltaV™ Live Graphics Interface Advanced
- 7037 DeltaV & Communication Bus Interfaces
- 7018 DeltaV™ Hardware & Troubleshooting
- 7027 DeltaV Systems Administration Window 7/Server 2008
- 7305 DeltaV™ SIS Implementation II
- 7020 AMS Device Manager
- 7039 AMS Device Manager with DeltaV
- 7032 FieldBus System and Devices

I&E MAINTENANCE

- 7018 DeltaV™ Hardware & Troubleshooting
- 7020 AMS Device Manager
- 7039 AMS Device Manager with DeltaV
- 7009 DeltaV™ Implementation I
- 7016 DeltaV™ Batch Implementation
- 7030 Fieldbus Devices
- 5590 Power Quality and Grounding
- 7303/4 DeltaV™ SIS Maintenance
- 7037 Communication Bus Interfaces with DeltaV™ Systems

CONTINUOUS CONTROL OPERATOR

- 7012 DeltaV™ Continuous Operation
- 7412 DeltaV™ Live Continuous Operation
- 7014 DeltaV™ Batch Operation
- 7414 DeltaV™ Batch Operation using Live
- 7016 DeltaV™ Batch Implementation

BATCH OPERATOR

- DeltaV™ Essential Operator Training Solution
- 7009 DeltaV™ Implementation I
- 7016 DeltaV™ Batch Implementation

SYSTEM ADMINISTRATORS

- 7009 DeltaV™ Operate Implementation I Introduction
- 7023 DeltaV™ Information Technology for Automation Personnel
- 7027 DeltaV™ System Administration
- 7028 DeltaV™ Virtualization Administration
- 7226 DeltaV Cybersecurity Administration

LEGEND :

- Core Competencies
- Additional Competencies

COURSE 7039 **CEUs : 2.8**

AMS Device Manager with DeltaV

Overview
This 4-days course is for instrumentation technicians and engineers responsible for all areas of managing and ensuring the reliability of instrumentation in the plant process including startup and commissioning, normal operations, maintenance, and troubleshooting.

The hands-on workshops with AMS Device Manager and DeltaV will address areas relating to the instrument technician's daily tasks, device troubleshooting / commissioning / replacement, alert configuration, and many other best practices relating to AMS Device Manager and the interactions with the DeltaV DCS.

Prerequisite
Microsoft windows experience. Course 7018 or 7009 or 7409.

Topics
- DeltaV and PlantWeb Overview
- HART Overview
- AMS Device Manager Overview
- AMS Device Manager User Interface
- Location Hierarchy & Adding Devices
- AMS Device Manager Browser Functions
- Monitoring System Alarms
- DeltaV Device Alarms
- Device Replacements
- Reviewing Audit Trail
- AMS Device Manager User Permissions
- QuickCheck SNAP-ON
- ValveLink SNAP-ON
- ValveLink Status Window
- ValveLink DVC Setup
- Device Calibration
- Smart Commissioning

Audience
- Responds to work orders created to calibrate, troubleshoot, repair, service, and replace instruments and valves
- Monitors alerts to preemptively address problems prior to operators seeing a problem in the control room
- Provides loop testing and assistance with instrumentation on plant turnarounds, startups, and for project work
- Improves process availability and reduces operations and maintenance costs

COURSE 7020 CEUs : 2.1

AMS Device Manager

Overview
Completing 3-days of AMS Device Manager hands-on instructor assisted training modules and exercises, provides the quickest route to your productive use of this predictive maintenance application.

Topics
- AMS Device Manager Features and Overview
- Viewing and Configuring HART Devices
- Creating a Plant Database Hierarchy and Assigning Devices
- Adding New Device Descriptors
- Device Replacement Procedures
- Using AMS Trex Device Communicator
- AMS Device Manager Audit Trail
- Calibration Assistant SNAP-ON
- Configuring and Monitoring System Alerts
- Network Communication Interface Setup
- AMS Database Operations
- Multiplexers and QuickCheck SNAP-ON
- User Configurations and Bulk Transfer
- DVC and ValveLink SNAP-ON
- Wireless Interface and AMS Wireless SNAP-ON
- AMS Device View

Audience
This course is intended for technicians and engineers who need to configure and use AMS Device Manager.

COURSE 7032 CEUs : 2.8

DeltaV Fieldbus Devices Configuration & Control

Overview
This 4-day lecture / lab course provides maximum hands-on experience working with FOUNDATION fieldbus instruments such as: the FIELDVUE Digital Valve Controller, Rosemount Pressure and Temperature Transmitters. The student will use the DeltaV control system to commission fieldbus devices, assign foundation fieldbus function blocks to field devices, troubleshoot using diagnostics and AMS Device Manager to manipulate device parameters.

Prerequisites
7009 DeltaV Implementation I or 7018 DeltaV Hardware Installation and Troubleshooting

Topics
- DeltaV Saleable System Overview
- Macro Cycle Execution
- Fieldbus Function Blocks
- FIELDVUE™ Theory of Operation
- Transmitter Theory of Operation
- AMS Device Manager Methods
- Fieldbus Wiring Practices
- System Troubleshooting
- Accessing Fieldbus Devices
- Alarms and Alerts at DeltaV Workstations
- Segment Checkout Procedures
- Replace Wizard

Audience
This course is for individuals responsible for designing and configuring FOUNDATION Fieldbus segments. As well as analyzing the fieldbus macro cycle, troubleshooting Fieldbus segments / devices and modifying FOUNDATIONTM Fieldbus parameters.

Today's plant is a myriad of process control hardware and software. Everything from valves to compressors, from level measurement devices to real-time data servers, and from boilers to condensers, just operating this collection of technologies is challenging. Making them all work together at their best to produce the best product at a profit is a daunting task. It takes more than just monitoring the process to be successful. It takes optimizing the devices and the process together in the right environment with people who have a clear understanding of both.

Working in a plant for long periods of time can create "legacy thinking", where even when it is in the best interest to change, nobody can bring themselves to do so because "that's the way we've always done it." Emerson's Educational Services offerings can show how to optimize existing equipment with new methods and technology.

COURSE 7037 **CEUs: 2.5**

DeltaV & Communication Bus Interfaces

Overview

This 3-1 / 2 day course covers the integration of fieldbus compliant devices using DeltaV systems. Upon completion of the course the student will be able to install, configure and verify proper operations of AS-I, Profibus DP, DeviceNet Serial, EtherNet IP, and Wireless HART devices, including proper wiring practices. The AMS Intelligent Device Manager will be used to interrogate PROFIBUS DP and Wireless HART devices.

Prerequisites

7009 DeltaV Implementation I or 7018 DeltaV Hardware and Troubleshooting or 7049 DeltaV Live Operator Interface Implementation I. The target audience usually does the following:

- Responds to work orders created to calibrate, troubleshoot, repair, service, and replace instruments and valves
- Monitors alerts to preemptively address problems prior to operators seeing a problem in the control room
- Provides loop testing and assistance with instrumentation on plant turnarounds, startups, and for project work
- Improves process availability and reduces operations and maintenance costs

Topics

- AS-I Overview
- AS-I Wiring and Installation
- AS-I Network with DeltaV
- PROFIBUS DP Overview
- PROFIBUS Wiring and Installation
- Configuring a PROFIBUS Segment
- Device Net Overview
- Device Net Diagnostics and Configuration
- Troubleshooting
- Serial Interface
- HART® Overview
- Ethernet I/O Overview
- Wireless I/O Overview

Audience

The hands-on workshops with DeltaV along with AMS Device Manager will address areas relating to the instrument technician's daily tasks.

COURSE 7009 **CEUs : 3.2**

DeltaV Operate Implementation I Introduction

Overview
During the 4-1 / 2 day course, the student will be able to define system capabilities, define nodes, configure continuous and sequential control strategies, create process alarms, operate the system, troubleshoot the system and modify operator displays.

This course includes access to a virtual DeltaV system to practice and review course workshops complete with brief recorded demonstrations available after course completion.

Prerequisites
Microsoft Windows experience. Prospective attendees lacking process control experience should first attend Control Loop Foundation, Course e9025.

Topics
- System Overview
- DeltaV Explorer
- DeltaV Diagnostics
- Control Modules
- Control Studio
- Motor Control with Interlocking and Permissive Conditions
- Regulatory Control
- Cascade Control
- DeltaV Operate
- System Operation
- Alarms & Process History
- View Sequential Function Charts
- Configure Theme Dynamos

Audience
This course is designed for process & process control engineers responsible for obtaining key production data, maintaining, configuring and troubleshooting a DeltaV system.

COURSE 7012 **CEUs : 1.4**

DeltaV Continuous Operation

Overview
This 2-day course (14 hrs.) uses lectures and hands-on workshops to train operators for continuous process operation using the standard generic DeltaV Operate user interface (for the DeltaV Live user interface, please select course 7412).
- Access operator main displays
- Manipulate various control module operating parameters to operate the process
- Access faceplates and detail displays
- Understand process indications from graphics dynamos
- Monitor and acknowledge different alarm conditions
- Monitor process performance
- View real-time and historical trend data
- Access historical data and event chronicle

Generic curriculum uses the out-of-the-box DeltaV configuration standards library. In most cases, the site configuration will differ from the generic library. After taking the generic course, students will be able to understand the basic layout of the graphics - e.g. the toolbar vs alarm banner, how to access the Alarm Summary page and acknowledge alarms, use of dynamos, where to click to access the Faceplate and Detail Displays. This is considered platform training on DeltaV, not process training. For customized curriculum, designed around your site graphics and processes, please contact Educational Services for a proposal.

Topics
- DeltaV Distributed Control System Overview
- DeltaV Operator Interface DeltaV Multi-Monitor Workstations
- Operating Discrete and Analog Control Modules
- Alarms and Events
- Operating Motor Control Modules
- Operating Regulatory and Cascade Control Modules
- DeltaV Trending Unit Alarms
- Operating Equipment Modules
- DeltaV SIS

Audience
This course is for operators, supervisors and managers responsible for the operation of continuous processes using the DeltaV Operate user interface.

COURSE 7014 **CEUs : 2.1**

DeltaV Batch Operation

Overview

This 2 ½ - day course (18 hrs.) uses lectures and hands-on workshops to train operators for batch process operation based on the ISA-88 Standard using the generic DeltaV Operate user interface (for the DeltaV Live user interface, please select course 7414).

- Access operator main displays
- Manipulate various control module operating parameters to operate the process
- Access faceplates and detail displays
- Understand process indications from graphic Dynamos
- Monitor and acknowledge different alarm conditions
- Monitor process performance
- View real-time and historical trend data
- Access historical data and event chronicle
- Understand basic batch terminology
- Manipulate Unit Module parameters
- Access different Batch Operator Interfaces
- Run recipe batches
- Review batch history data

Generic curriculum uses the out-of-the-box DeltaV configuration standards library. In most cases, the site configuration will differ from the generic library. After taking the generic course, students will be able to understand the basic layout of the graphics - e.g. the toolbar vs alarm banner, how to access the Alarm Summary page and acknowledge alarms, use of dynamos, where to click to access the Faceplate and Detail Displays. This is considered platform training on DeltaV, not process training. For customized curriculum, designed around your site graphics and processes, please contact Educational Services for a proposal.

Topics

- DeltaV Distributed Control System Overview
- DeltaV Operate Interface
- Display Navigation
- Operating Discrete and Analog Control Modules
- Operating Motor Control Modules
- Operating Regulatory and Cascade Control Modules
- Alarms and Events
- DeltaV Trending
- Unit Alarms
- Operating Equipment Modules
- DeltaV SIS
- Batch Process Simulation
- Batch Process Overview
- Operating Unit Modules
- Batch Operator Interface and/or DeltaV Operate Batch Controls
- DeltaV Batch Historian
- DeltaV Campaign Manager

Audience

This course is for operators, supervisors, and managers responsible for the operation of batch processes using the DeltaV Operate user interface.

COURSE 7412 **CEUs : 1.4**

DeltaV™ Live Continuous Operation

Overview
This 2-day course (14 hrs.) uses lectures and hands-on workshops to train operators for continuous process operation using the standard generic DeltaV Live user interface (for the DeltaV Operate user interface, please select course 7012).

Students who complete this course will:
- Access operator main displays
- Manipulate various control module operating parameters to operate the process
- Access faceplates and detail displays
- Understand process indications from graphic GEMs
- Monitor and acknowledge different alarm conditions
- Monitor process performance
- View real-time and historical trend data
- Access historical data and event chronicle

Topics
- DeltaV Distributed Control System Overview
- DeltaV Live Operator Interface
- Operating Discrete and Analog Control Modules
- Alarms and Events
- Operating Motor Control Modules
- Operating Regulatory and Cascade Control Modules
- DeltaV Trending
- Unit Alarms
- Operating Equipment Modules
- DeltaV SIS

Audience
This course is for operators, supervisors and managers responsible for the operation of continuous processes using the DeltaV Live user interface.

COURSE 7016 **CEUs : 3.2**

DeltaV™ Systems Batch Implementation

Overview
This 4-1/2 day course covers the implementation of a complete batch application. A process simulator will provide a batch application. Students will use DeltaV Batch software to configure recipe entities including, Aliasing, Equipment Trains, Dynamic Unit Allocation, Phase Logic, Operations and Unit Procedures. Equipment entities will also be configured including, Units modules and Process cells.

Prerequisites
Course 7009, DeltaV Implementation I or 7409, Using DeltaV Live Operator Interface Implementation I

Topics
- Batch Overview
- Unit Phase
- Alias Definition
- Unit Module
- Process Cell
- Class Based Control Modules
- Class Based Equipment Modules
- Operation
- Unit Procedure
- Procedure
- Equipment Trains
- Unit Aliasing
- Dynamic Unit Allocation

Audience
This course is designed for individuals responsible for configuring and commissioning DeltaV Batch software.

COURSE 7017 **CEUs : 3.2**

DeltaV™ Implementation II Intermediate

Overview
During the 4-1 / 2 day course, the student will be able to identify function block structures, interpret function block status values, design error masking, define nodes, configure class-based control modules using the Command-Driven algorithm. This course includes access to a virtual DeltaV system to practice and review course workshops complete with brief recorded demonstrations available after course completion.

- Configuration of Equipment Modules for Supervisory Control
- Custom Faceplates and Dynamos

Prerequisites
Course 7009, DeltaV Implementation I or 7409, Using DeltaV Live Operator Interface Implementation I

Topics

- Function Block Structure
- Function Block Structures & Status Values
- Analog Control Palette Blocks PID Bias / Gain, Deadtime, Ratio, Signal Characterizer, Splitter
- HART Inputs and Outputs
- HART Device Alarms
- AMS Intelligent Device Manager
- Unit Alarms
- DeltaV Tune with InSight
- Device Control Options
- Class Based Control Modules

Audience
This course is for process control engineers responsible for designing, implementing and testing configuration using the DeltaV system.

COURSE 7414 **CEUs : 1.6**

DeltaV Batch Operation using Live

Audience
This 2½ - day course (18 hrs.) uses lectures and hands-on workshops to train operators for batch process operation based on the ISA-88 Standard using the generic DeltaV Live user interface (for the DeltaV Operate user interface, please select course 7014).

Students who complete this course will:

- Access operator main displays
- Manipulate various control module operating parameters to operate the process
- Access faceplates and detail displays
- Understand process indications from graphic GEMs
- Monitor and acknowledge different alarm conditions
- Monitor process performance
- View real-time and historical trend data
- Access historical data and event chronicle
- Understand basic batch terminology
- Manipulate Unit Module parameters
- Access different Batch Operator Interfaces
- Run recipe batches
- Review batch history data

Topics

- DeltaV Distributed Control System Overview
- DeltaV Live Operator Interface
- Display Navigation
- Operating Discrete and Analog Control Modules
- Operating Motor Control Modules
- Operating Regulatory and Cascade Control Modules
- Alarms and Events
- DeltaV Trending
- Unit Alarms
- Operating Equipment Modules
- DeltaV SIS
- Batch Process Simulation
- Batch Process Overview
- Operating Unit Modules
- Batch Operator Interface and / or DeltaV Live Batch Controls
- Procedures
- DeltaV Batch Historian
- DeltaV Campaign Manager

Audience
This course is for operators, supervisors, and managers responsible for the operation of batch processes using the DeltaV Live user interface.

COURSE 7018 **CEUs : 2.8**

DeltaV™ Hardware & Troubleshooting

Overview
This course provides an overview of the DeltaV Control Network, M- and S-series hardware, and software applications. Upon completion, you will be familiar with the hard-ware and be able to perform troubleshooting techniques. This 4-day course focuses on the hardware components that make up the DeltaV system: M-series controllers and I / O, S-series controllers and I / O (including CHARMs), and DeltaV Smart Switches. Using a combination of lectures and workshops, you will learn how to use operator and diagnostic tools to identify and locate hardware-related fault conditions. Workshops provide the opportunity to disassemble and reassemble the M- and S-series hardware and return the system to an operating state. This course includes access to brief recorded demonstrations available after course completion so students can review exercises completed in class. If your systems include bus technologies such as Foundation Fieldbus, we recommend courses 7030, 7032, or 7037. The 7018 course satisfies the Prerequisites requirement for these bus course (except 7032).

Prerequisites
Windows experience

Topics
- DeltaV Overview
- Operator Alarms
- DeltaV Diagnostics
- DeltaV Smart Switches
- DeltaV I / O Cards and Carriers
- Controllers and Power Supplies
- Electronic Marshalling (CHARMs)
- HART I / O
- Redundant I / O

This course is recommended for instrumentation and maintenance technicians, managers, and configuration engineers who need to know about DeltaV hardware.

Audience
This course is recommended for instrumentation and maintenance technicians, managers, and configuration engineers who need to know about DeltaV hardware.

COURSE 7027 **CEUs : 3.2**

DeltaV System Administration

Overview
This 4-1 / 2-day course is designed for control system administrators, process control engineers and IT specialist responsible for managing, installing, and commissioning a DeltaV system. This course includes access to a virtual DeltaV system to practice and review course workshops complete with brief recorded demonstrations available after course completion.

Prerequisites
Course 7009 DeltaV Implementation I or 7023 DeltaV Information Technology for Automation Personnel, or 7409 Using DeltaV Live Operator Interface Implementation I

Audience
This course is designed for control system administrators, process control engineers and IT specialist responsible for managing, installing, and commissioning a DeltaV system.

Topics
- Overview of system components and topologies
- DeltaV domain setup, including independent DeltaV domain controllers
- DeltaV installation procedures
- Licensing
- Import and export of configuration
- Firmware upgrades
- Controller health diagnostics
- User administration
- Configuration Database administration
- Creating additional workstations
- Auto Update services
- Continuous historian administration
- Advanced continuous historian administration
- Remote desktop services
- Event chronicle administration
- Network Time Protocol configuration / diagnostics
- Backup and restore procedures

COURSE 7026 **CEUs : 3.2**

DeltaV™ CyberSecurity

Overview
The 4-1/2 day DeltaV Cybersecurity course focuses on the DeltaV Security Manual and the practical implementation of the guidance provided within. Students will engage in activities to properly apply Emerson's Defense-in-Depth strategies so that students can have the skills to apply these same strategies on their DeltaV systems. Students are encouraged to read the DeltaV Security Manual before attending class.

Prerequisites
7027 DeltaV System Administration or 7023 DeltaV Information Technology for Automation Personnel

Topics

DeltaV Deployment Guidelines & Physical Security
- Define the expected DeltaV installation environment
- Define physical access rules (cabinets, switches, consoles, etc.)

DeltaV Area Control Network
- Define proper network segmentation and topology rules
- Use DeltaV Firewall-IPD and Smart Switches
- Lock and protect embedded nodes

Communications Security & Remote Access to DeltaV
- Define communication and security requirements for remote access
- Use Emerson Smart Firewall
- Deploy Remote Desktop Gateway server
- Configure DeltaV remote desktop server

Active Directory Design & User Account Management
- Define Active Directory implementation guidelines
- Create customized DeltaV users and groups
- Audit user privileges
- Configure password policies through Group Policy Objects

Device Hardening & Event Logging
- Define device internal and interface protection rules
- Deploy DeltaV Endpoint protection and Application White-listing (McAfee)
- Configure daily anti-virus scans
- Manage white-list inventory, adding applications to white-list
- Configure Windows Firewall
- Configure syslog and other device logs to report to a System Information and Event Management (SIEM) appliance
- Configure DeltaV Network Security Monitoring appliance
- Use SIEM dashboard to show system events

Software Patching
- Define how to obtain and install security patches
- Use Emerson's Automated Patch Management solution
- Backup & Recovery
- Define best practices and available technologies to backup critical data
- Use the DeltaV Backup & Recovery (Acronis) software

Audience
DeltaV System Administrators or IT personnel responsible for implementing DeltaV security

COURSE 7226 **CEUs : 2.1**

DeltaV Cybersecurity Administration

Overview
This 3-day course describes why and how cybersecurity mechanisms are paramount in today's open architecture automation systems. Digital Transformation relies on plant floor data being available to enterprise level analytics, while remaining secure at the same time. This course describes how cybersecurity solutions deployed on a DeltaV system can be properly administered throughout the lifecycle of the system.

Topics
- Trellix Electronic Policy Orchestrator Overview
- Installing and configuration of ePO
- Maintaining ePO using the Management Console
- Deploying Endpoint Protection
- Deploying Application White-listing
- ePO Reports
- Integrated Patch Management
- Patch Management Overview
- Integrated Patch Management Console
- Applying Software Updates
- Patch Management Reports
- Backup and Recovery Overview
- Installing DeltaV Backup and Recovery
- Performing Backups
- Monitoring Backup and Recovery
- Performing Recovery
- Backup and Recovery Reports

Audience
This course is designed for system administration personnel responsible for Cybersecurity.

COURSE 7023 **CEUs : 2.1**

DeltaV Information Technology for Automation Personnel

Overview
This 3-day course will provide students with a set of essential information technology (I.T.) skills. The course will cover different technologies like physical and virtualization environments, system hardware, networking concepts, windows domains, and cybersecurity. Using a combination of lecture and hands-on workshops, students will learn to successfully set up, maintain, and troubleshoot a DeltaV distributed control system, integrate and exchange information with Business Systems, and create CyberSecurity awareness. The course will distill the core learnings and techniques required from the Information Technology skill set, providing a targeted launch point for the student to successfully adopt these technologies. After attending, students will be prepared to dive deeply into these technologies by attending other higher-level course like

- 7027 - DeltaV System Administration
- 7028 - DeltaV Virtualization Administration, and
- 7226 – DeltaV CyberSecurity Administration.

Topics

- Overview
- Networking
- Virtualization
- Domain
- Servers
- DeltaV
- Security
- Troubleshooting

Audience
DeltaV System Administrators, Process Control Engineers, Instrumentation / Electrical Technicians, and I.T. staff supporting the DeltaV system.

COURSE 7029 **CEUs : 3.2**

DeltaV Virtualization with VRTX

Overview
This 4-1/2 day course focuses on the installation, configuration and system administration of a virtualized DeltaV distributed control system. Using a combination of lectures and workshops students will learn skill sets that enable them to properly plan, implement and maintain a robust DeltaV Virtual Studio (DVS) system intended for online (production) use. A key objective of this course is to prepare students for all aspects of owning a DVS system with special emphasis on providing highly available, reliable and secure access for end users of the DVS system.

Prerequisites
Course 7023 DeltaV Information Technology for Automation Personnel or 7027 DeltaV Systems Administration

Topics

- Virtualization Primer — Basics of How Virtualization Works
- Overview of DeltaV Virtualization Solutions
- Planning a DeltaV Virtual Studio System
- Installing and Configuring a VRTX Chassis and Blade Servers
- Creating DeltaV Virtual Machines including a ProfessionalPlus Node
- Configuring a WYSE or a Pepperl+Fuchs Thin Client and Redundant Thin Client Networks
- Create a Highly Available Failover Cluster
- Patching and Hardening of Cluster Nodes
- Cluster Health Monitoring and Troubleshooting
- Disaster Recovery and Replication
- Upgrading and Capacity Expansion

Audience
This course is designed for system administrators responsible for installing and maintaining DeltaV Workstations on a virtual platform.

COURSE 7025 **CEUs : 3.2**

DeltaV Operate Graphics Interface Advanced

Overview
This 4½-day course is for process control engineers responsible for configuring advanced functionality in the DeltaV user interface. This course expands on graphic topics covered in both the DeltaV Implementation, course 7009 and DeltaV Implementation II, course 7017.

Prerequisites
Course 7009, DeltaV Implementation I or 7409, Using DeltaV Live Operator Interface Implementation I

Topics

- Visual Basic Primer
- Forms
- Modules
- Schedules
- User Preferences
- Picture Sizing Environment Customization
- Custom Faceplates
- Function Block Faceplates
- FRS Functions
- Pop Up Menus
- Color Threshold Tables
- Custom Dynamos
- Tag Groups
- Key Macro Editor
- Theme Dynamos

Audience
This course is for process control engineers responsible for configuring advanced functionality in the DeltaV user interface.

COURSE 7303 **CEUs : 2.1**

DeltaV Safety Instrumented System with SLS 1508 Maintenance

Overview

This 3-day course is a hands-on instructor led course. The course covers the architecture of the DeltaV SIS including Rosemount SIS instruments and Fisher SIS Digital Valve Controllers. Students will gain a working knowledge of the hardware and software allowing them to troubleshoot and maintain the system.

Prerequisites

Course 7018 DeltaV Hardware and Troubleshooting is a requirement.

Topics

- Safety Lifecycle
- DeltaV SIS Overview
- DeltaV SLS1508 Hardware
- Safety Instrumented Functions
- Rosemount SIS Instruments
- AMS Device Manager
- Fisher SIS Digital Valve Controller
- SISNet Repeaters

Audience

This course is for Electrical & Instrument technicians, maintenance technicians, E&I / reliability engineers and other personnel responsible for maintaining a DeltaV SIS SLS 1508.

COURSE 7201 **CEUs : 3.2**

DeltaV Advanced Control Suite

Overview

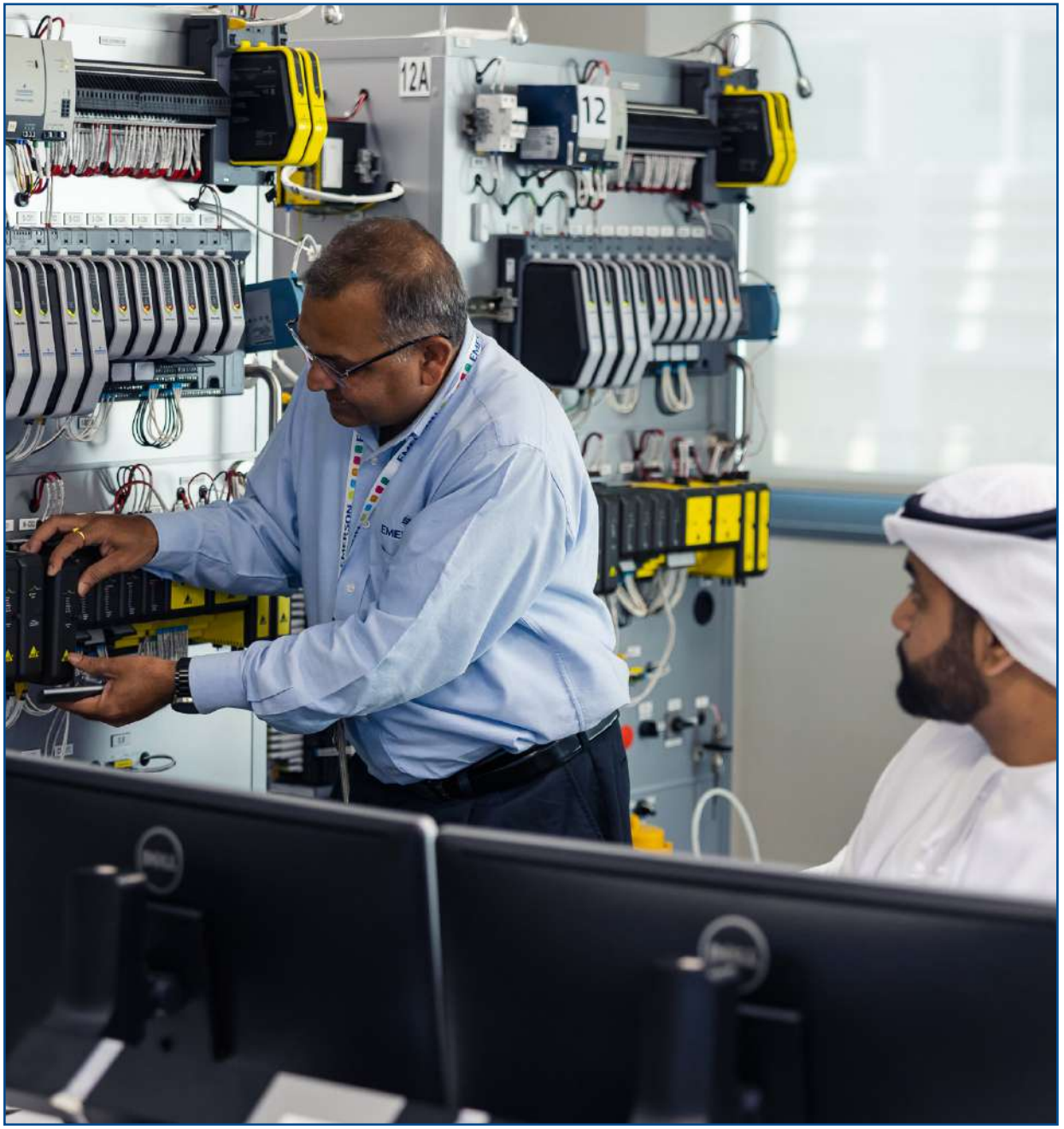
This 4-1 / 2 day course introduces students to the advanced control tools available within the DeltaV and how they may be used to improve plant operations. The principal technology that is utilized in each product will be discussed. The areas of improvement that may be achieved will be detailed. Also, each student will gain hands on experience with these tools in class exercises based on realistic process simulations.

Prerequisites

7009, DeltaV Implementation I or 7409 DeltaV Live Operator Interface Implementation I or equivalent field experience

Topics

- The Control Foundation in DeltaV Traditional Tools e.g. Override, Cascade, Ratio Improvements Provided by Advanced Control
- DeltaV Inspect with InSight
- Detection of Abnormal Conditions
- Performance Indices Performance Reports DeltaV Tune with InSight Measurement of Process Dynamics
- Tuning Methods
- Tuning Response Process Learning
- Adaptive Tuning Adaptive Control
- DeltaV Fuzzy Principles of Fuzzy Logic Control FLC Function Block, Tuning
- DeltaV Predict MPC for Multi-Variable Control
- Model Identification, Data Screening
- Simulation of Response, Tuning
- DeltaV Neural Creation of Virtual Sensor
- Data Screening, Training
- DeltaV Simulate Suite
- Process Simulation
- Simulate Pro



COURSE 7999 **CEUs : 1.4**

DeltaV™ New Features

Overview
This 2-day course covers the new features and enhancements made to the DeltaV Distributed Control System in v13 and v14 using a combination of lectures, demos and hands-on workshop exercises.

Students who complete the course will:
- Understand the new features and enhancements introduced in DeltaV v13 and v14
- Understand the benefits of the new features
- Understand how to apply the new features
- Perform workshop exercises implementing the new features

Prerequisites
- Course # 7009, 7409 or 7018

Topics
The course includes 40 core topics and 32 optional topics categorized under the following functional areas:
- Administration
- Alarm Management
- Batch
- Hardware
- Logic Configuration
- Miscellaneous
- Operator Interface
- Security
- SIS

The 40 core topics require 2-days to complete. The course may be customized based on the individual site's topics of interest. For customized course delivery, the course duration will be determined based on the topics to be included or excluded.

Audience
This course is intended for plant personnel responsible for configuring, administering, securing, maintaining and operating DeltaV. This includes control system engineers, administrators, maintenance engineers and technicians.

COURSE 7304 **CEUs : 2.1**

DeltaV SIS with Electronic Marshalling Maintenance

Overview
This 3-day hands-on instructor led course covers the architecture of the DeltaV SIS with Electronic Marshalling including Rosemount SIS instruments and Fisher SIS Digital Valve Controllers. Students will be able to identify the DeltaV SIS with Electronic Marshalling hardware and software components. Students will practice troubleshooting and maintenance techniques with DeltaV SIS simulators throughout the course.

Prerequisites
Course 7018 DeltaV Hardware and Troubleshooting is a requirement.

Topics
- Safety Lifecycle
- DeltaV SIS Overview
- DeltaV SIS with Electronic Marshalling Hardware architecture Including Power Requirements
- Commissioning and Downloading the DeltaV SIS with Electronic Marshalling components
- Safety Instrumented Functions
- Rosemount SIS Instruments
- AMS Device Manager
- Fisher SIS Digital Valve Controller
- DeltaV Diagnostics
- Partial Stroke Test using AMS Intelligent Device Manager with Electronic Marshalling
- Local Safety Network Bridges

COURSE 7305 **CEUs : 3.2**

DeltaV™ SIS Implementation

Overview
This 4-1 / 2 day course is a hands-on instructor led course. The course covers complete DeltaV SIS Implementation including hardware and software architecture. Students will be able to design a DeltaV SIS Network and Safety Instrumented Functions (SIFs). Additionally, students will be able to configure smart SIS instruments and their associated alerts, including partial stroke testing.

Prerequisites
Course 7009 or 7409 is a requirement. Recommend IEC 61511 knowledge.

Audience
This course is for personnel who design, implement, commission and service DeltaV SIS.

Topics
- DeltaV SIS Overview
- DeltaV SIS SLS 1508 Hardware Architecture
- DeltaV SIS with Electronic Marshalling Hardware Architecture
- DeltaV Safety Instrumented Functions
- Rosemount SIS Instruments
- AMS Device Manager relating to DeltaV SIS
- Fisher SIS Digital Valve Controllers
- SISNet Repeaters
- DeltaV SIS Security
- DeltaV Version Control
- Local Safety Network Bridges

COURSE 7409 **CEUs : 3.2**

DeltaV Implementation using DeltaV Live Introduction

Overview
During the 4-1 / 2 day course, the student will be able to define system capabilities, define nodes, configure continuous and sequential control strategies, create process alarms, operate the system, troubleshoot the system and modify operator displays using the DeltaV Live Operator Interface introduced with DeltaV Version 14.3.This course includes access to a virtual DeltaV system to practice and review course workshops complete with brief recorded demonstrations available after course completion

Prerequisites
Microsoft Windows experience. Prospective attendees lacking process control experience should first attend Control Loop Foundation, Course 9025

Topics
- System Overview
- DeltaV Explorer
- DeltaV Diagnostics
- Control Modules
- Control Studio
- Motor Control with Interlocking and Permissive Conditions
- Cascade Control
- Regulatory Control
- DeltaV Live
- Graphics Studio
- System Operation
- Alarms & Process History View
- Sequential Function Charts
- Equipment Modules
- High Performance GEMs
- Electronic Marshalling (CHARMS)

Audience
This course is designed for process & process control engineers responsible for obtaining key production data, maintaining, configuring and troubleshooting a DeltaV system.

COURSE 7425 **CEUs : 3.2**

DeltaV Live Graphics Interface Advanced

Overview
This 4-1/2 day course is for process control engineers responsible for configuring graphics in the DeltaV Live operator interface. This course teaches basic options through advanced configuration topics.

Prerequisites:
7009, 7409, or 7025

Topics
- Graphics Studio
- Environment Customization
- DeltaV Live
- DeltaV Live Administration
- Display Interactions
- Conversion Functions
- Class Based Graphical Element Modules (GEMs)
- Contextual Displays
- Custom Faceplates
- Pop Up Pictures
- Forms
- Layout Configuration - Multi Monitor Configuration
- Display Frame Customization
- Publishing
- Display Hierarchy
- Script Assistant
- Language Changes
- Theme GEMs
- Importing and Exporting Displays

Audience
This course is designed for process & process control engineers responsible for obtaining key production data, maintaining, configuring and troubleshooting a DeltaV system with the DeltaV Live Operator Interface.

COURSE 7039 **CEUs : 2.8**

AMS Device Manager with DeltaV™

Overview
This 4 day course is for instrumentation technicians and engineers responsible for all areas of managing and ensuring the reliability of instrumentation in the plant process including startup and commissioning, normal operations, maintenance, and troubleshooting. The hands-on workshops with AMS Device Manager and DeltaV will address areas relating to the instrument technician's daily tasks, device troubleshooting / commissioning / replacement, alert configuration, and many other best practices relating to AMS Device Manager and the interactions with the DeltaV DCS.

Prerequisites
Microsoft windows experience. Course 7018 or 7009 or 7409.

Topics
- DeltaV and PlantWeb Overview
- HART Overview
- AMS Device Manager Overview
- AMS Device Manager User Interface
- Location Hierarchy & Adding Devices
- AMS Device Manager Browser Functions
- Monitoring System Alarms
- DeltaV Device Alarms
- Device Replacements
- Reviewing Audit Trail
- AMS Device Manager User Permissions
- QuickCheck SNAP-ON
- ValveLink SNAP-ON
- ValveLink Status Window
- ValveLink DVC Setup
- Device Calibration
- Smart Commissioning

Audience
The target audience usually does the following:
- Responds to work orders created to calibrate, troubleshoot, repair, service, and replace instruments and valves
- Monitors alerts to preemptively address problems prior to operators seeing a problem in the control room
- Provides loop testing and assistance with instrumentation on plant turnarounds, startups, and for project work
- Improves process availability and reduces operations and maintenance costs

COURSE 7400 **CEUs : 0.7**

DeltaV Standalone PK Controller

Overview
This 1-day course provides lectures and hands-on workshops about PK controller, its hardware components and administration for a standalone application.

Prerequisite
Windows experience and DeltaV configuration background.

Audience
This course is designed for engineers and technicians responsible for installing and maintaining PK controller standalone application.

COURSE 7028 **CEUs : 2.1**

DeltaV Virtualization Administration

Overview

This 3 day DeltaV Virtualization course focuses on the various software that is used in the management of a DeltaV Virtualization environment. Students will engage in workshops that will reinforce the material discussed to successfully run and maintain a Virtualized DeltaV system.

Prerequisites

7024 DeltaV Systems Administration: XP/Server 2003 or; 7027 DeltaV System Administration

Topics

Virtualization Hardware Setup
- Overview of a typical virtualization system
- Differences between a Host & DC Servers
- Role of a DC
- Networks within a virtualized system
- Clusters
- Virtual Networks

Virtual Machines
- Review Templates
- Process to create Virtual machines
- Overview of classroom setup
- Create additional DeltaV Workstations

DeltaV Virtual Studio Tools
- Grouping
- VM Modifications
- Edit Collection Settings

Thin Clients
- DeltaV Remote Desktop Connection (DRDC)
- Redundant Thin Client Networks

Replication & Disaster Recovery
- Install / Configure Replication
- Examine replication options
- Recover from failovers

Health Monitoring & Troubleshooting
- Emerson SHM
- DVS / Cluster Diagnostics
- DeltaV Alarming
- Failure Scenarios

Host Patching & Moving VMs
- Patching Procedures, Verification

Audience

This course is designed for control system administrators, process control engineers and IT specialist responsible for managing, installing, and commissioning a DeltaV system.

COURSE 7229 **CEUs : 3.2**

DeltaV Virtualization with HCI

Overview

This 4 1/2-day course will allow students to perform the installation and configuration of HCI servers with DeltaV Virtual Studio. Additionally, students will learn to configure virtual networking, deploy VMs from template, configure various thin clients, and identify key health metrics and troubleshooting information. The course uses a combination of lectures and hands-on workshops to enable an understanding of the underlying technology and gain skills to implement the solution at site.

Prerequisites

Course 7023 or 7027 or equivalent work experience

Topics
- Virtualization and Failover Clustering Overview
- Virtualization Hardware Bill of Materials Review
- Network Architecture Planning
- Installation Map / Flow
- Install and Configure the Host Server Operating System
- Using Dell Integrated Dell Remote Access Controller (iDRAC)
- Configuring Remote Direct Memory Access (RDMA)
- Configuring Virtual LANs (VLANs)
- Configure a Hirshmann Greyhound GRS105 switch
- Build Cluster Domain Controller
- Create Cluster Domain
- Install and License DeltaV Virtual Studio (DVS)
- Create a Failover Cluster
- Configure Cluster Quorum
- Storage Pool Operation and Monitoring
- Virtual Switch Configuration
- Review Virtual Machine (VM) Templates
- Create VMs from Templates
- Import/Export VMs
- Creating additional DeltaV Workstation VMs
- Using Various Tools Available in DVS
- Configure Amulet Hotkey DX1600 Thin Client
- Configure Lenovo ThinkCentre M70q Thin Client
- Configure P&F BTC12 Thin Client
- Review Troubleshooting Guides and Information Required for Support Calls
- Enabling HCI Passthrough Alarms into the DeltaV DCS Alarm Banner
- Review Failover Cluster Diagnostics

Audience

This course is designed for system administrators responsible for installing and maintaining DeltaV Workstations on a virtual platform.

COURSE 7501V

DeltaV Backup & Recovery Virtual

Overview

This 1.0-day course is designed for control system administrators and IT specialists responsible for managing, installing and executing Backup and Recovery procedures for DeltaV. The course will be a combination of lectures and hand-on workshop exercises.

Prerequisites

7023 or 7027 or equivalent DeltaV administration experience (Prerequisites are always after Overview. And we are using Overview and not Description).

Topics

- Backup and Recovery Overview
- Backup and Recovery
- Backup and Recovery Installation
- Installing Components on Manage Machines
- Universal Restore Utility
- Backup Plan Templates
- Backup Recovery Groups
- Backup Recovery Vaults
- Backing up a System
- Scheduling Backups
- Monitoring the Backup & Recovery System
- Recovering Backups
- Maintaining and Troubleshooting DeltaV Backup and Recovery
- Creating Reports for DeltaV Backup and Recovery

Objectives

- Describe the Backup and Recovery solution for DeltaV.
- Define the components of the Backup and Recovery solution.
- Identify DeltaV's built-in Backup and Recovery tools.
- Identify DeltaV's different data sources
- Define the network architecture of Backup and Recovery
- List relevant documentation for Backup and Recovery
- List the system requirements for Backup and Recovery installation
- Describe the Management Server installation
- Describe the Agent installation
- Workshop - Install the Agent for Windows on PPN
- Define Backup Groups, Storage Node and De-duplication
- Workshop – Create Backup Groups
- Workshop – Add a Managed Location
- Define Backup Plans and the Emerson Backup Plan Templates
- Workshop – Import Backup Plan Templates
- Describe the execution of a backup task
- Workshop – Backup DeltaV Data
- List built-in tools for recovering DeltaV data
- List the relevant documentation for DeltaV data recovery
- List the system considerations prior to performing a recovery
- Describe the execution of a recovery task
- Workshop – Recover DeltaV Data
- Define what is Bootable Media
- Define what is Universal Restore
- Describe how to use the dashboard to monitor the system status
- Workshop – Configure Overview Dashboard
- Describe how to generate reports
- Workshop – Generate Report
- List the relevant documentation for troubleshooting Backup and Recovery issues
- List useful information and files for troubleshooting

Audience

This course is designed for control system administrators and IT specialists

COURSE 7620V CEUs : 2.8

Operational Certainty Alarm Management Virtual

Overview

Dynamic Alarm Management and the rationalization of alarms based on process state or mode is rapidly becoming recognized as the key solution path to eliminating alarm floods. Reducing alarm floods is vital to meeting the standards (ISA18.2, ISO/IEC 62682 and EEMUA 191) adopted by governing bodies (OSHA & IEC) and industry (AIChE). In addition, automated alarm shelving management has proven as another best practice for near elimination of long standing alarm lists on the operator's console. Our process engineers will share the experiences and best practices learned through rationalizing and implementing Dynamic Alarm Management on hundreds of operator workstations worldwide. The results captured by this work has made significant impact on the safety and operational awareness of every operator and is still paying dividends to the operating companies who have embraced the application of sound process engineering principles.

Topics

- Introduction to Alarm Management
- The Alarm Management Lifecycle
- Alarm Philosophy
- Identification, Rationalization and Detailed Design
- Management of Change, Implementation, Operation and Maintenance
- Monitoring and Assessment and Audit
- Dynamic Management and Alarm Shelving Concepts
- Project Execution Phases and Example Discussions

Audience

This course is ideal for managers and engineers in plant operations, process, process controls, and safety and reliability.

COURSE 7650V CEUs : 2.1

DeltaV AgileOps System Administration Virtual

Overview
In this 3-day course, students explore the software deployment of AgileOps and examine key design specifications that are useful for defining and maintaining an AgileOps system. This course focuses on best practices for architecting an AgileOps system, infrastructure requirements for communications between AgileOps and a Control System, AgileOps installation, lifecycle management, administering AgileOps users, and troubleshooting an AgileOps system. Completion of this class will enable the student to install and configure an AgileOps system based on standard architecture

Topics
- AgileOps Overview
- System Architecture
- AgileOps Licensing
- Installation Procedures
- Lifecycle Management
- User Management
- Troubleshooting

Audience
System Administrators and IT specialists responsible for managing, installing, and commissioning an AgileOps system.

COURSE 9025 CEUs : 3.2

DeltaV Control Loop Introduction

Overview
This 4-1/2 day course for personnel new to automation and covers process control fundamentals as well as the practical aspects of control system design and applications. Upon completion of this course the student will be able to effectively understand and work with single and multi-loop control strategies. Interactive workshops allow the student to apply what they learn in the class.

Prerequisites:
Windows experience

Topics:
- Background — Historic Perspective
- Measurements — Basic Transmitter Types, Limitations
- Analyzers — Examples of On-Line Analyzers
- Final Elements - Valves and Variable Speed Drives
- Field Wiring and Communications — Traditional, HART, Foundation fieldbus, WirelessHART
- Control Strategy Documentation — Plot Plan, Flow Sheet, P&ID, Loop Sheet
- Operator Graphics and Metrics — Considerations in Display Design
- Process Characterization — Identifying Process Dynamics and Gain
- Control Objectives
- Single Loop Control — Basis for PID, Guideline in Selecting PID Structure, Action
- Tuning and Loop Performance - Manual and Automated Tuning Techniques
- Multi-loop Control — Feedforward, Cascade, Override, Split-range, Valve Position Control
- Model Predictive Control —Addressing Difficult Dynamics, Interactive Processes
- Process Modeling — Development of Process Simulation for Control System Checkout
- Application Examples — Batch, Continuous, Combustion, Distillation, Unit Coordination

Audience
This course is for engineers, managers, technicians, and others that are new to process control. This course includes the practical aspects of control design and process applications that course developers personally learned through years of hands on experience while designing and commissioning process control applications.

ASSET RELIABILITY

ASSET RELIABILITY

Paths to Success

Emerson training gives you the confidence and experience in industrial maintenance technologies. Our alumni can tell you about the recognition and job promotions they've received from plant management. With Emerson, you walk down a path that leads to full mastery of knowledge and skills necessary in a Machinery Health program. These "Paths to Success" are outlined here. They include both theory / application courses for certification as well as product-specific courses. Offered at Emerson's training centers, these classes can also be held at your chosen facility. For a calendar schedule of courses and registration information, visit **https: / / mytraining.emerson.com / lmt / clmsbrowseV2.prmain?in_sessionid=2J845A531298544**

Category I Vibration Analyst Path to Success

- Fundamentals of Vibration Analysis
- Fundamentals of CSI 2130 Machinery Health Analyzer
- Basic Vibration Analysis
- Introduction to AMS Machinery Manager
- Category I Vibration Analyst Certification Exam

Category II Vibration Analyst Path to Success

- Intermediate Vibration Analysis
- Intermediate AMS Machinery Manager
- SI 2140 Advanced Function with PeakVue™

Category II Vibration Analyst Certification Exam

Category III Vibration Analyst Path to Success

- Advanced Vibration Analysis
- Advanced AMS Machinery Manager
- PeakVue™ Mystery and Autocorrelation
- Category III Vibration Analyst Certification Exam

Online Monitoring Path to Success

- Online Prediction (CSI 4500 / 6500 / XP32)
- Operation and Maintenance
- Online Protection (CSI 6000 / 6500)
- Operation and Maintenance
- Turbo Machinery Diagnostic

Lubrication Analyst Path to Success

- Lubrication Level 1 & 2 with Certification exam
- Wear Debris Analysis Workshop
- OilView® for AMS Machinery Manager
- Reliability Management Path to Success
- Maintenance Best Practice
- Root Cause Failure Analysis Adding other Technologies to your Credentials
- Laser Alignment
- Balancing Theory & Application
- Basic Ultrasonic Theory & Technology & Level 1 Certification Exam
- Electric Motor Diagnostics & Basic Motor View
- IR Thermography & Level 1 Certification Exam

Companies today rely on fewer people to do more work. That's why the need of training is more critical than ever to achieve and maintain cost-effective maintenance programs.

COURSE 2069 **CEUs : 1.4**

Vibration Analysis Introduction

Overview
The 2-day class prepares participants for the Basic Vibration Analysis Course. Students learn about causes of vibration and methods of measurement. Although the training course does not provide instruction on Emerson's technologies, the class will use them to demonstration vibration principles.

Topics
- Introduction to Vibration Components of a Predictive Maintenance Program Basic Fault Identification
- Vibratory Fault Characteristics and Patterns
- Information to Help Jump Start a Vibration Program

Audience
This vibration training course is for those with no prior experience in vibration analysis.

COURSE 2031 **CEUs : 2.8**

Vibration Analysis Category I

Overview
This 4-day course complies with Category I Vibration Analyst per ISO standard 18436-2: Vibration condition monitoring and diagnostics. Although this training course is not product specific, students will use Emerson's AMS technologies for demonstration purposes. The class shows the student how to use the vibration analyzer in conjunction with Emerson AMS Machinery Manager software to analyze basic vibration defects. Participants will receive a complimentary copy of the Pocket Vibration Analysis Trouble-Shooter Guide.

Prerequisites
Fundamentals of vibration or up to six months of vibration experience is recommended.

Topics
- Introduction to Vibration
- Measurement Setup
- Data collection and analysis
- Basic analyzer functions
- The class shows students how to recognize machine defects such as:
    - Imbalance
    - Shaft misalignment
    - Looseness Rolling element bearing defects
    - Gear problems Resonance
    - Belt Defects
    - AC Induction Motors
    - Journal Bearings
    - Rotating Equipment

Audience
This course is intended to enable students to operate single channel machinery analyzers, dump and load routes, recognize the difference between good and bad data, and compare vibration measurements against pre-established alert settings.

Emerson helps maximize the return on your investment in technology and people.

COURSE E2069 **CEUs : 0.2**

Machinery Health Vibration Introduction

Overview
This 2 hour e-course provides instruction to individuals with no prior experience in vibration analysis. The course introduces the technology of vibration analysis by explaining what vibration analysis is and how it plays a critical role in any predictive maintenance program. Students are led through a self-paced discussion on how vibration analysis works with many examples of the types of faults that can be detected. Students will also gain an understanding of where and how vibration is measured with an emphasis on good data collection techniques. Students will learn important terminology that will be critical to their success as they progress to the next level of training in vibration analysis; Emerson's Basic Vibration Analysis course.

Topics
Chapter 1: Fundamentals of Vibration
Chapter 2: How is Vibration Measured?
Chapter 3: Understanding the Vibration Signal
Chapter 4: Vibration Units
Chapter 5: Analysis Parameters
Chapter 6: Data Analysis: Where to begin?

Note:
Typical duration of course access is 3 months. Contact education@emerson.com to request an extension.

Our instructors share their own **real-world experiences** and guide classes through **hands-on exercises** that reinforce the lesson. Reliability Solutions strategy includes training courses designed to help you start-up and maintain your mechanical equipment. Our goal is to provide you with the knowledge to keep your plant running smoothly.

COURSE 2032 **CEUs : 2.8**

Vibration Analysis Category II

Overview
This 4-day course complies with Category II Vibration Analyst per ISO standard 18436-2: Vibration condition monitoring and diagnostics. Category II vibration analysts are expected to be able to select appropriate vibration measurement techniques, set up instruments for basic resolution of amplitude, frequency, and time, perform basic spectrum analysis, maintain a database of results and trends, perform single-channel impact tests, classify, interpret, and evaluate test results in accordance with applicable specifications and standards, recommend minor corrective actions, and understand basic single plane field balancing concepts.

This course also features the use of the Emerson Machinery Analyzer in conjunction with advanced machinery analysis techniques. Discussions of case histories on machinery faults are one of the focal points of this course. Students will receive a complimentary copy of the Simplified Handbook of Vibration Analysis, Volume I, by Art Crawford.

Prerequisites
Basic Vibration Analysis course and a cumulative 18 months of field experience are recommended.

Topics
- Recognition of Machine Defects including:
- Reference Standards
- Imbalance
- Misalignment
- Bent Shaft
- Soft foot
- Anti-friction and Journal Bearings
- Looseness
- Resonance
- Electrical Defects
- Gearboxes
- Belts

COURSE 2068 **CEUs : 2.8**

AMS Machinery Manager Introduction

Overview
In this 4-day class students learn methods of database creation and vital features of route creation such as collecting reference data, analyzer / computer communication, and the basic concepts of Analysis Parameter Sets, Alarm Limit Sets, and Fault Frequency Sets. A machinery analyzer is used to demo the process of loading routes for data collection. This course will also include a basic overview of the vibration plotting application and reporting functions. This course is based on the current mass release of the AMS Machinery Manager software. Students can call to verify if the course is appropriate to the version they are using. Wireless technology, Infrared Analysis, Motorview, Online Monitoring and Oilview modules are covered in other course offerings and are not part of this course.

Prerequisites:
Computer experience with the Windows operating system and some vibration analysis experience are recommended.

Topics
- RBM wizard
- Database Setup
- Route Management
- Reports
- Vibration Analysis Module

Audience
This course was designed for the new users of AMS Machinery Manager.

COURSE 2076 **CEUs : 1.4**

AMS 2140 Introduction

Overview
This 2-day hands-on course focuses on the basic operation of the AMS 2140 Machinery Health Analyzer. Students collect data on lab machines.

Prerequisites:
Understanding of vibration analysis. Familiar with basic vibration collection principles.

Topics
- Analyzer / Computer Communication
- Predefined Route Data Collection
- Job Data Collection and Setup
- Manual Mode Measurements
- Introduction to AMS 2140 Analysis Expert Functions

Audience
This course is designed for personnel with little or no experience with AMS analyzers, but who are experienced in the field of vibration data collection and analysis.

Note:
You may take with Fundamentals of Vibration as a 4-day course.

COURSE 2082 **CEUs : 2.8**

Lubrication Introduction & Intermediate

Overview
Guidelines and instruction for starting an oil analysis program will be provided in this 4-day course. The course focuses on the basic properties of lubricants and lubricant specifications including additive packages.

An overview of laboratory testing methods and interpretation of test data is taught.
In addition, instruction is provided on proper storage and handling of new, unused lubricants, as well as sample point identification and best practices for collecting samples from machinery.
Basic contamination control and wear debris analysis and identification is covered.

The focus of the level two portion of the course is the use of oil analysis with other predictive technologies to enhance a machinery health program. Machine life extension and reduction of unscheduled downtime will be covered in depth. Training includes introductions to lubricant engineering, failure concepts, and failure prevention. Information will be provided on greases and synthetic lubricants, including advantages and applications.

The importance of Wear Debris Analysis and contamination control and their impact on reliability will be stressed. Guidelines and step-by-step procedures will be offered for consolidating lubricants, setting alarm limits, as well as managing and enhancing existing lubrication programs. Optional Level I & Level II Lubrication Certification exams will be administered at the end of the course for no charge.

Audience
This course is designed for individuals who have limited or no oil analysis experience.

COURSE 2082V **CEUs : 1.4**

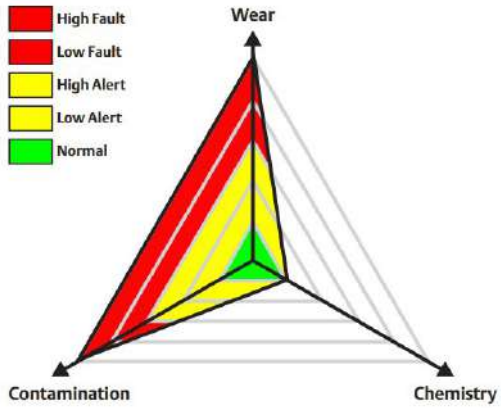
Machinery Health Lubrication Introduction & Intermediate Virtual

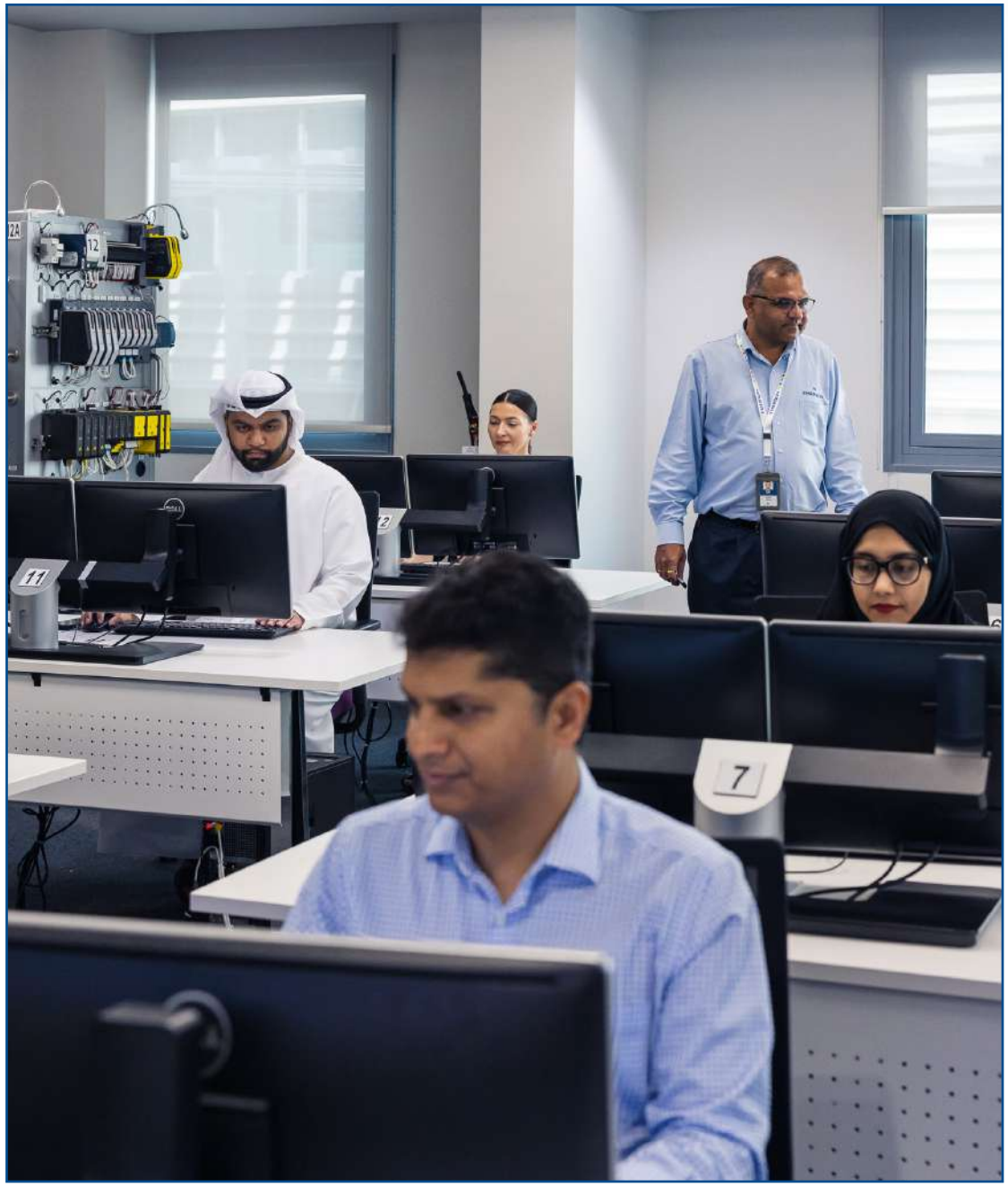
Overview
The focus of this 1.5-day course is the use of oil analysis with other predictive technologies to enhance a machinery health program. Machine life extension and reduction of unscheduled downtime will be covered in depth. Training includes introductions to lubricant engineering, failure concepts, and failure prevention. Information will be provided on greases and synthetic lubricants, including advantages and applications. The importance of Wear Debris Analysis and contamination control and their impact on reliability will be stressed. Guidelines and step-by-step procedures will be offered for consolidating lubricants, setting alarm limits, as well as managing and enhancing existing lubrication programs.

Prerequisites
Basic understanding of lubrication.

Topics
- Introduce Oil Analysis and how to start an oil analysis program
- Storage and handling practices
- Sampling practices
- Basic contamination control
- Intro to Lubrication Concepts
- Wear Debris Analysis, Additives, Synthetic Lubricants, Lubrication Greases

Audience
Lubrication specialist, vibration analyst, reliability engineer, mechanic





COURSE 2021EX

Machinery Health Vibration Analyst Exam Category I

Overview
Category I exam, available at the end of course #2031

Test Format
Written exam

Duration
2 hours

Passing Grade
70%

Eligibility for Examination:
- Minimum Duration of Training (hours): 30
- Minimum Duration of Cumulated Experience (months): 6

COURSE 2022EX

Machinery Health Vibration Analyst Exam Category II

Overview
Category II exam, available at the end of course# 2032

Test Format
Written exam

Duration
3 hours

Passing Grade
70%

Eligibility for Examination:
- Minimum Duration of Training (hours): Category I + 38
- Minimum Duration of Cumulated Experience (months): 18
- Passing Category I exam is NOT a prerequisite for taking Category II exam

COURSE 2035 / 2075 **CEUs : 2.1**

PeakVue Analysis & Autocorrelation

Overview

This 3-day course provides insight into advanced functionality of Emerson's unique PeakVue and PeakVue Plus technology and Autocorrelation.
Machine vibrations generate both macro and microscopic vibrations, and microscopic vibrations generate stress waves that have frequency ranges determined by the mass of the impacting object. The properties of these stress waves will be explained. Autocorrelation will teach the power of correlated waveform analysis. The same time waveform used for autocorrelation is used by the FFT to generate the spectrum. The strengths of the autocorrelation data are complimentary to the strengths of the spectral data.

This course makes use of case studies from real-life examples of common faults and live demonstrations illustrating specific mounting procedures to reliably detect certain faults. Comparisons between PeakVue technology techniques and demodulation will also be demonstrated.

Prerequisites

Students should be familiar with AMS Machinery Manager software, fundamentals of the AMS 2140 and conventional vibration data collection and analysis techniques.

Topics

- Proper PeakVue technology set-ups for all speeds (as low as 1 rpm)
- Sensor selection and sensor mounting
- Setting alarm levels
- Choosing trend parameters Analyzing PeakVue technology spectra and waveforms
- Uses of the circular waveform plot
- Introduce the autocorrelation coefficient
- Highlight the strengths of the autocorrelation coefficient function data relative to spectra data
- Demonstrate the use of the autocorrelation coefficient data as a diagnostic tool to support the spectra data for vibration analysis through several case studies.
- Identify unique patterns of the autocorrelation function data for certain classes of bearing faults, gearing faults, etc.

COURSE 2074 **CEUs : 2.8**

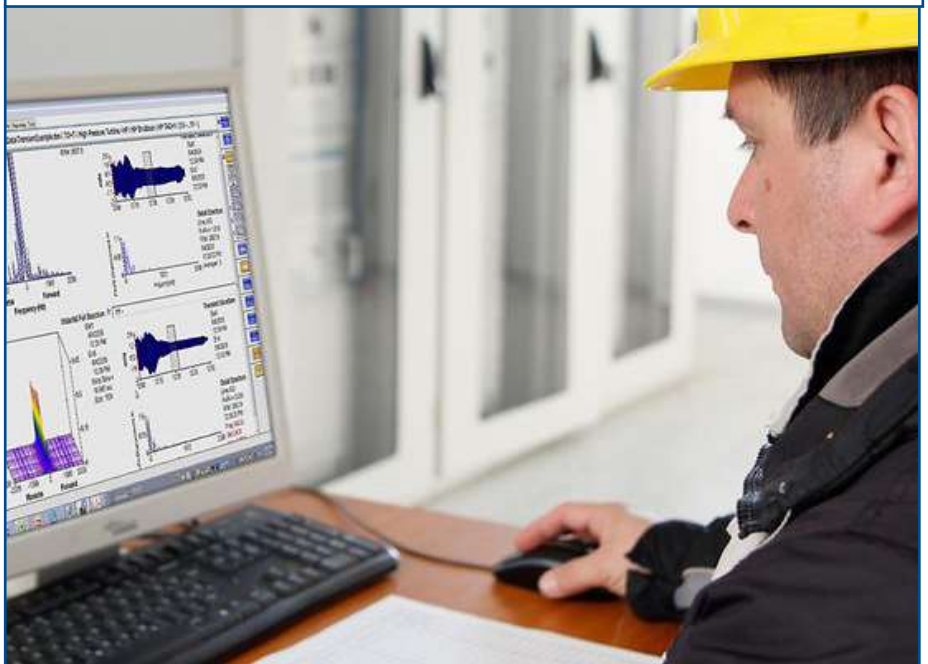
AMS Machinery Manager Intermediate

Overview
This 4-day course teaches some of the more advanced machinery analysis techniques available in AMS Machinery Manager. This course focuses more on analysis and reporting with the use of Vibration Analysis module, Reporting module, Exception Analysis, PEAKVUE technology and full version of RBMview. This course is based on the current mass release of the AMS Machinery Manager. Students can call to verify if the course is appropriate to the version they are using.

Wireless technology, Infrared Analysis, Motorview, Online Monitoring and Oilview modules are covered in other course offerings and are not part of this course.

Prerequisites
Intro to AMS Machinery Health Manager (course # 2068), Basic Vibration Analysis course or 6 months vibration analysis experience are recommended

Topics
- PEAKVUE Technology
- Vibration Analysis module
- Reporting Module
- Exception Analysis
- Nspectr
- BMview
- Data Transfer
- Route Modification



COURSE 2088 **CEUs : 2.8**

AMS Online Prediction Operation & Maintenance

Overview
This 4-day course best suits those who have a CSI 4500, AMS 6500, AMS 2600 or XP32 system installed and operational prior to attending the course.

Prerequisites
Knowledge of vibration and industrial machinery is helpful, but not necessary.

Topics
- Vibration basics and terminology relating to the CSI 4500, AMS 6500, AMS 2600 or XP32
- System overview: functionality and system components
- Online Watch
- Used to monitor the system daily
- Online Config
- Adding a new machine to an existing database
- Vibration Analysis Module
- Spectrums, waveforms and trend data
- PeakVue technology Processing
- Transient setup and capture evaluation
- Review of customer databases

Audience
- System users or analysts
- Personnel using the CSI 4500, AMS 6500, AMS 2600 or XP32 daily
- Those responsible for configuring databases and analyzing data

COURSE 2094 **CEUs : 2.1**

AMS 2140 Advanced

Overview
This 3-day course is intended for personnel with single-channel vibration analysis experience and little or no multi-channel experience. This class covers advanced signal processing using Emerson's patented PeakVue technology for slow-speed analysis, coherence and cross-channel phase, operating deflection shapes (ODS), modal analysis, and other advanced techniques.

Prerequisites
Single channel vibration analysis experience is required.

Topics
- PeakVue™
- Resonance Detection
- Dual Channel Data Collection
- Fundamentals of Cross-Channel Data Collection
- Introduction to Coherence and Cross-Channel Phase
- Orbit Data Collection
- Introduction to Operating Deflection Shape (ODS) Testing Methods
- Introduction to Modal Analysis Testing Methods
- Advanced Two-Channel DLP
- Zoom Analysis, Cascade, and Overall
- Transient Time Waveform Capture and Analysis
- AMS 2140 Analysis Experts Functions

Audience
This course is intended for personnel with single-channel vibration analysis experience and little or no multi-channel experience.

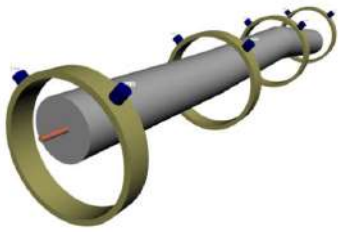
COURSE 2033 **CEUs : 3.2**

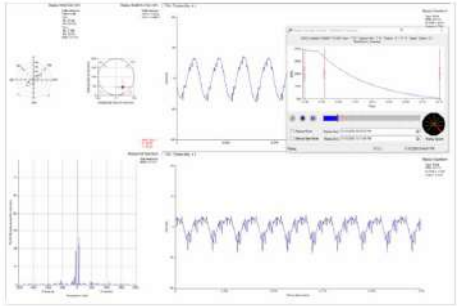
Vibration Analysis Category III

Overview
This 4½-day course complies with Category III Vibration Analyst per ISO standard 18436-2: Vibration condition monitoring and diagnostics. This course expands on the subjects covered in the Intermediate Vibration course (Category II), especially in the areas of fault analysis and corrective actions. The class details advanced analysis techniques. The dual channel machinery health analyzer features are introduced including the use of AMS™ Suite: Machinery Health Manager Software to set up the advanced analyzer features and the powerful downloadable programs for data collection. The transient machinery health analyzer capabilities are covered such as long-term time waveform. The class covers advanced resonance detection using a variety of testing methods, including triggered data collection.

Prerequisites
Intermediate Vibration Analysis course and a cumulative three years of field experience are recommended.

Topics
- Specify appropriate vibration instrumentation
- Hardware and software for both portable and permanently installed systems
- Perform spectrum and time waveform
- Analysis under both steady-state and unsteady
- Operating conditions
- Establish specifications for vibration levels and acceptance criteria for new machinery
- Measure and analyze basic operational deflection shapes (ODS)
- Measure and analyze PeakVue™ technology measurements
- Slow Speed Technology (SST®)
- Zoom Analysis
- Transient Techniques
- Dual Channel Machinery Analyzer Features
- Triggered Data Capture
- Resonance Detection





COURSE 2016 **CEUs : 1.4**

Balancing Theory & Application for AMS 2140

Overview
This 2-day class teaches how to perform single and dual-plane balancing using both graphical and analyzer-based balancing methods. The class uses the CSI 2130 Machinery Health Analyzer on lab machinery.

Prerequisites
Understanding of vibration analysis is recommended.

Topics
- Imbalance identification
- Use of vectors
- Calculating influence coefficients
- Use of the auxiliary analyzer balance functions
- Use of UltraMgr module
- Calculating a system lag
- Estimate trial weights
- Balancing flexible rotor systems
- Balancing overhung rotors
- Applying balancing techniques in an industrial setting

COURSE 2051 **CEUs : 2.1**

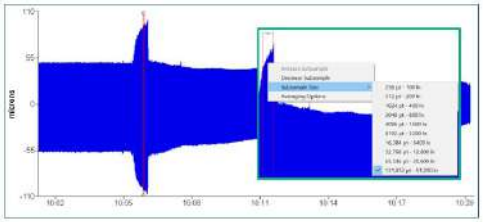
Time Waveform Analysis

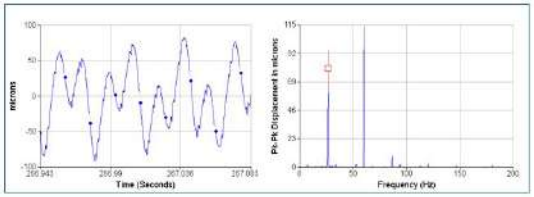
Overview
This 3-day course is designed to upgrade and enhance waveform analysis skills for vibration technician and reliability engineers. There are several reasons that vibration analysts want to understand and use waveform analysis, since some significant defects are better analyzed in the time domain. The time domain provides visual confirmation of amplitude enhancement and reduction. Time waveform analysis can present, in a static picture, amplitude variations and changes in frequencies that the FFT cannot display without using multiple (dynamic) graphics. Further, a waveform graphically presents accurate peak vibration amplitudes representing defect severity.

Prerequisites
Intermediate vibration analysis or eighteen-month vibration related field experience is recommended.

Topics
- Waveform Data Acquisition: Analog to Digital Conversion (A / D)
- Waveform Parameters for Trending: Peak to Peak, Crest Factor, and Analog Overall
- Waveform Tools: Revolution Markers, Difference Frequency markers, Phase, Peak, RMS, Crest Factor
- Waveform Patterns: Sinusoidal, Impacting, Truncated, Asymmetric, Transient / Random, Modulated and Discontinuity or Bad / Compromised Data.
- FFT vs. Waveform: Benefits and limitations of each Applications of Waveform Analysis: Synchronous Time Averaging (STA) for rolls in nip; Peak Hold averaging for maximum carrier / sideband frequency amplitudes for rolling element bearings; Time Difference cursors for identifying beat frequencies and repeating impacts (gear teeth cracks or defects); Transient Analysis of motor inrush current; Distinguishing Misalignment from Looseness using waveform analysis as a confirmation to the FFT data; and Gearbox Analysis using STA waveforms and standard waveform discontinuity analysis.

Audience
Vibration technicians and reliability engineers





COURSE 2070 OR 2070V **CEUs : 2.8**

AMS Machinery Manager Advanced

Overview
This 4-day course is the third in our series of AMS Machinery Manager courses. Its focus is on management, modification and optimization of the existing AMS Machinery Manager database. Students will learn how to modify existing Wizard configurations, add and edit users, statistically adjust alert and fault levels make global database changes, and many other very useful database functions. This course is intended for the advanced user who has already created a machinery database and has been acquiring, storing and analyzing data for six months or more.

Prerequisites
Intermediate Vibration course 2032 or one year vibration analysis experience is recommended. Experience with the Windows operating system is recommended.

Topics
- Advanced Analysis Features in Vibration
- Analysis Module
- Problem Reporting
  Status-at-a-Glance Operation and Reporting
- Nspectr®
- Data Locker Management
  Wizard Reporting Techniques and Modification / Addition of Setup Information
- Austostat Database Utility
- Database Zip Utility
- Network Administration
- Data Locker Management

Audience
This course is based on the current mass release of the AMS Machinery Manager software. Students can call to verify if the course is appropriate to the version they are using Infrared Analysis Motorview, CSI Online Machinery Health Monitor and Oilview modules are covered in other course offerings and are not part of this course.

COURSE 2074V **CEUs : 1.4**

AMS Machinery Manager Intermediate Virtual

Overview
This 4-day course teaches some of the more advanced machinery analysis techniques available in AMS Machinery Manager. This course focuses more on analysis and reporting with the use of Vibration Analysis module, Reporting module, Exception Analysis, PEAKVUE technology and full version of RBMview. This course is based on the current mass release of the AMS Machinery Manager. Students can call to verify if the course is appropriate to the version they are using.

Wireless technology, Infrared Analysis, Motorview, Online Monitoring and Oilview modules are covered in other course offerings and are not part of this course.

Prerequisites
Intro to AMS Machinery Health Manager (course # 2068), Basic Vibration Analysis course or 6 months vibration analysis experience are recommended.

Topics
- PEAKVUE Technology
- Vibration Analysis module
- Reporting Module
- Exception Analysis
- Nspectr
- BMview
- Data Transfer
- Route Modification

Audience
Prerequisites Intro to AMS Machinery Health Manager (course # 2068), Basic Vibration Analysis course or 6-months vibration analysis experience are recommended.

COURSE 2080 **CEUs : 1.4**

Machinery Health Online Protection Operation & Maintenance

Overview
This 3-day course is a hands-on training for anyone involved with operating and maintaining an Online Protection System. Workshops include practice with “live” monitors and racks.

Topics
- Overview of hardware components
- Rack configuration
- Operator display software
- Data acquisition software
- Interface with the On-line prediction system
- System troubleshooting and maintenance.

Audience
This 3-day course is a hands-on training for anyone involved with operating and maintaining an AMS 6500 Protection System.

COURSE E2140 **CEUs : 0.6**

Machinery Health AMS 2140 Introduction

Emerson's Machinery Health training now includes the Fundamentals of the AMS 2140 eLearning course, designed to provide you with the tools you need to perform data collection using the AMS 2140 Machinery Health Analyzer.

The course leads you through a basic introduction of the analyzer including panel descriptions and reviews of the purpose and function of all connectors, ports, slots, keys, indicators and buttons. The user learns how to load a pre-defined route into the analyzer, take general data as well as specialized data, and then dump that data back into the computer for further diagnostic analysis.

Topics

- Analyzer / Computer Communication
- Predefined Route Data Collection
- Job Data Collection and Setup
- Manual Mode Measurements
- Introduction to CSI 2140 Analysis Expert Functions

COURSE 2070CV **CEUs : 1.4**

AutoStat for AMS Suite: Machinery Health Manager

AutoStat is included in the standard curriculum of the 4-day Advanced AMS Machinery Manager, course 2.070. This 2-day session only covers AutoStat in the AMS Machinery Manager software. Alarms are an important part of any analysis program. Properly setting alarms allows the user to quickly identify an abnormal machine condition and reduces time spent analyzing machines that are running in acceptable or "normal" condition. AMS Machinery Health Manager provides the user the ability to create up to 12 parameter bands with alarms in addition to the Overall value. Calculating ideal alarm values for these parameters can be very complicated. Autostat uses statistical analysis to provide limit value, for the individual parameter bands by analyzing the data associated with similar pieces of equipment.

Overview

This 2-day hands-on course focuses on the basic operation of the CSI 2140 Machinery Health Analyzer. Students collect data on lab machines. This course is designed for personnel with little or no experience with CSI analyzers, but who are experienced in the field of vibration data collection and analysis.

Topics

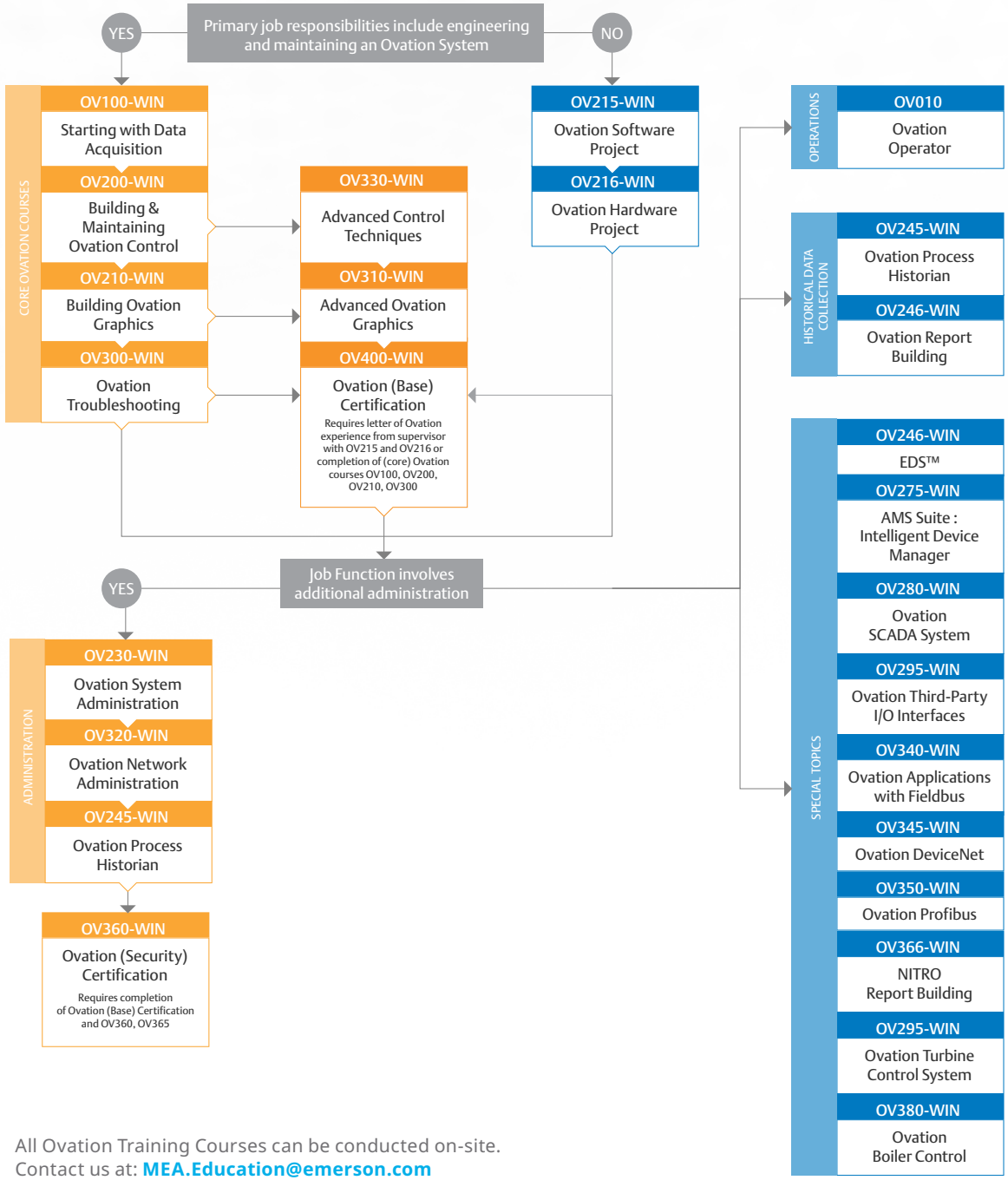
- Analysis Parameter Alarm vs Narrow band
- Alarms -What's the Difference?
- Database Setup Requirements and Reports
- Creating and Editing Analysis Groups
- Modifying and Creating New Parameter Alarms
- Creating and Editing Statistical Envelopes
- Using these Alarms within the Vibration Analysis Plotting Application

OVATION

Course Map

The Ovation Course Map is designed to help students determine their course path for Ovation training. Emerson offers the industry's broadest array of process automation products and services; a total solution for your plant automation needs. We are committed to providing our customers with an exceptional level of education that spans every aspect of our product portfolio. We work hard to ensure that our academic deliverables are as applicable to your everyday job functions and responsibilities as possible.

Our course map is an instrumental tool for charting your path to success.



All Ovation Training Courses can be conducted on-site.
Contact us at: **MEA.Education@emerson.com**

COURSE OV100

Ovation Data Acquisition

Overview

This 5-day course provides experience using an Ovation Data Acquisition System (DAS). Ovation terminology and proper use of Ovation documentation are discussed. Students are introduced to the major components of the system and practice using Ovation tools that are designed to make data acquisition easy. Exercises include modifying and building database point records for analog and digital points. The students physically connect various field devices to the I / O and test the signals. Basic techniques for troubleshooting data acquisition hardware and software are also included in the course. These courses are intended for anyone who will need to work with the DAS of the Ovation system in a Windows environment.

Topics

- Recognize Ovation terminology and identify the types of drops used for data acquisition in an Ovation system.
- Demonstrate the ability to effectively use Ovation documentation
- Describe the functions of the Ovation network and its components
- Describe the general architecture of an Ovation system
- Describe the database point record movement between various drops as points are monitored, modified and built
- Monitor plant processes using data acquisition tools
- Recognize, modify and build the various types of database point records in an Ovation system
- Select and configure I / O modules for typical field devices
- Wire and test complete signal paths between various field devices and appropriate / database point records
- Analyze problem situations and implement appropriate corrective solutions

COURSE OV200

Ovation Building & Maintaining Ovation Control

Overview

This 5-day course is designed to provide proficiency in reading Ovation functional control schemes. Tuning, building and implementing new control schemes to improve performance are covered. Both modulating (analog) and discrete digital control schemes are included in the scope of the course. Discussions include the various types of control algorithms available and how they can be used to create effective control. These courses are intended for people who work with Ovation Controllers to tune and build the analog and digital control schemes.

Prerequisites

Students must have a good understanding of the Ovation system architecture and how database point records are built and maintained in the Ovation Windows-based system. It is recommended that students attend an OV100-WIN course prior to attending this course.

Topics

- Interpret and apply a control functional to the Windows-based system.
- Interpret and tune implemented control using the available tools.
- Edit existing control schemes.
- Demonstrate proficiency in building digital & analog control.
- Design and implement a tracking scheme to meet specific control requirements.
- Recognize the relationship between control schemes and graphic diagrams.
- Implement given control requirements using the Control Builder.
- Evaluate and determine the proper operation of a control scheme using the tools and methods provided.

COURSE OV210 **CEUs : 3.5**

Ovation Building Ovation Graphics

Overview
The OV210 course was designed to teach the end-user how to construct graphic diagrams that depict the controlled process. Students will use the Ovation Graphics Builder program to build process diagrams, implement the display of static and dynamic objects, provide for control linkage and conditional changes that occur due to alarm conditions or process changes. Methods for standardizing information entities, control interfaces and troubleshooting problems within the graphics code are also covered.

Prerequisites
OV100 and OV200 are strongly recommended

Objectives
Upon successful completion of this course, using the reference material provided, the student will be able to:

- Describe the different building areas within the graphic source code
- Build graphics to display static and dynamic plant data
- Employ various drawing techniques to create 3D graphics
- Directly link graphics to actual control using poke fields
- Design and implement MACROS used within graphics
- Implement conditional statements to create dynamic indications within the graphic
- Employ various techniques that enable the graphic code to execute more efficiently
- Use various application programs within a graphic to perform a specific function
- Assess and correct problems in graphics using available tools

Audience
This course is intended for all Operations personnel using the Ovation system.

COURSE OV010 **CEUs : 1.7**

Ovation Operator

Overview
This 2½-day course is designed to provide students with the ability to efficiently perform routine plant operations using the Ovation control system. Key topics include data acquisition, process analysis and control interfaces. Students will be able to use the tools provided to monitor processes controlled by the Ovation system and will learn to take appropriate actions to control these processes. These courses are intended for all operations personnel using the Ovation system in Windows environment.

Topics

- List the major components of the Ovation control system
- Display process diagram graphics
- Use process diagrams to interface with the control system
- Evaluate point alarm conditions and acknowledge emergent alarms
- Differentiate various point types and use the Point Information system to find and edit point records
- Create live and historical trends
- Navigate through control tuning diagrams
- Analyze problem conditions
- Use system reporting procedures
- Describe the function of Ovation applications icons
- Demonstrate familiarity with menu bars and tool bars in the various process diagram windows
- Demonstrate familiarity with the task bar and other Windows utilities

COURSE OV248 **CEUs : 2.1**

Enterprise Data Server™

Overview

This 3-day course is designed to give students a detailed understanding of EDS™ (Enterprise Data Server). Upon completion of this course, the student will be able to configure an EDS server to collect point data from an existing Ovation system. An EDS client will be properly configured and the applications of the EDS station will be covered extensively. This course is designed for anyone who will be using or managing the EDS.

Topics

- Illustrate the functions of the EDS system and architecture
- Explain how an EDS server is loaded and configured
- Configure an EDS client to communicate with an existing EDS
- Manage the data storage of the EDS
- Demonstrate how to view and interpret error messages
- Build reports using the EDS Report Builder
- Build custom graphics using the EDS Graphics Builder

COURSE OV246 **CEUs : 2.1**

Global Ovation OPH Report Building

Overview

This 3-day course will teach students to configure and retrieve historical data using the Ovation Process Historian (OPH) and Crystal Reports. Students will learn how to use the OPH Report Manager to define: Alarm, Soe, Point and Operator Event Reports. Students will also learn how to configure demanded reports, triggered reports and timed reports in the OPH Report Manager. Students will also use Crystal Reports to create new report formats for use in the OPH Report Manager.

Prerequisites

Ovation - Data Acquisition - OV100

Topics

- Describe the functions of the Ovation
- Process Historian and related components
- Recognize the Ovation Process
- Historian Database Schema and understand the concept of a Relational Database Management System (RDBMS)
- Schedule, automate and manipulate reports
- Distribute reports using printers and various output files
- Create custom reports and ad-hoc queries using various 3rd party applications such as Crystal Reports and MS Excel

The Ovation expert control system, a key component of the proven PlantWeb™ digital architecture, **delivers higher levels of plant availability, reliability, and environmental compliance**.

COURSE OV275 **CEUs : 1.4**

Ovation AMS Suite: Intelligent Device Manager

Overview

This 2-day course will provide the student with the skills to fully utilize the special features of I / O related to HART and smart field devices attached to the Ovation™ system. Students will learn the basic components of an Ovation system. Items discussed will include physical attachment of field devices to the Ovation I / O modules, building of HART / smart data points in the system, analysis of the data available from the field device, and diagnosis of problems that may occur. This course is intended for technicians and administrators using an Ovation system that includes HART and smart field devices.

Prerequisites

Students should complete OV100-WIN prior to taking this course. OV270-WIN and either OV200-WIN-3.0.X or OV200-WIN-3.1.X are also recommended.

Topics

- Identify the configuration of components in an Ovation system using Hart / smart devices
- Attach HART / smart field devices to the Ovation I / O cards
- Build database points for the field devices
- Use AMS™ Suite to obtain data from the devices
- Diagnose common problems and configuration errors

COURSE OV280 **CEUs : 2.1**

Ovation SCADA System

Overview

This 3-day course will provide the student with the skills to take full advantage of their Ovation SCADA system. Students will learn the basic components of an Ovation SCADA system. Items discussed will include SCADA Servers, remote terminal units, scan blocks, lines, ports, configuration tool, protocol analyzers and more. Students will establish communications using available Allen-Bradley, MODBUS or DNP 3.0 protocols. This course is intended for technicians and administrators using the Ovation SCADA system.

Prerequisites

Students should complete OV100-WIN and OV270-WIN prior to taking this class. OV200- WIN is also recommended, but not required.

Topics

- Identify the purpose and components in an Ovation SCADA system
- Identify the licensing requirements of an Ovation SCADA system
- Use the configuration tool to access and modify the system
- Analyze the communication protocols used with and Ovation SCADA system
- Utilize the protocol analyzer to interpret signal traffic between the SCADA Server and RTUs
- Interpret scan block data
- Create Ovation graphics to interface to the Ovation SCADA system

Extensive training opportunities are available for project managers, engineers, operators, technicians and system administrators.

COURSE OV330 **CEUs : 3.5**

Ovation™ Advanced Control

Overview
This 5-day course is intended for students who will implement their own control programs, or who will make significant modifications to existing programs. Using previous control building knowledge, the student will learn how to implement control design in an Ovation™ environment. This course is a continuation of the control topics discussed in OV200-WIN. The course will emphasize the proper selection, configuration and application of algorithms in the Ovation™ control system.

Prerequisites
Prior completion of OV200-WIN is strongly recommended. A working knowledge of control systems and control theory is suggested.

Topics
- Apply, tune and track all appropriate algorithms in open- and closed-loop configurations.
- Select, filter and compensate transmitter inputs.
- Implement complex sequential control.
- Appreciate important closed-loop control forms.
- Configure general math computations.
- Describe the interface of selected algorithms to input / output hardware.
- Use algorithms for timing, counting, accumulation and system-time applications.

COURSE OV230 **CEUs : 3.5**

Ovation System Administration

Overview
This 5-day course will provide students with an understanding of Ovation™ system licensing, security, configuration, backup and recovery. Students will learn how to navigate the Ovation™ file system as well as basic administration skills. Students will also explore Ovation workstation hardware. This course is intended for Ovation™ system administrators and those wishing to complete the Ovation Certification Program.

Prerequisites
Students must have a good understanding of Ovation system architecture. Experience working in a Windows environment is helpful but not necessary. Prior completion of the OV100-WIN, OV200-WIN and OV210-WIN, courses, is highly recommended but not required.

Topics
- Navigate and understand the Ovation™ engineering tools Developer Studio for Windows)
- Understand licensing of the Ovation™ system
- Implement process control and user security in the Ovation™ system (2.3 and lower)
- Apply system configuration changes to the Ovation™ system
- Add new and modify existing drops to the Ovation™ system
- Navigate and understand the Ovation file systems, structure, sharing and security
- Backup the Ovation database and required files to various media
- Load an Ovation™ system
- Recover the Ovation database and required files from backup
- Understand upgrading and maintaining the Ovation™ hardware.

Audience
OV100 and OV200 highly recommended

COURSE OV245 CEUs : 3.5

Ovation Process Historian

Overview
The OV245 course was designed to teach the end-user how to configure the Ovation Process Historian (OPH) to retrieve real-time and historical data. The Ovation Process Historian hardware and database schema is reviewed in detail and various methods or data retrieval will be discussed including Report Manager, Crystal Reports, Historical Reviews and Trends.

Prerequisites
Ovation - Data Acquisition - OV100

Topics
Upon successful completion of this course, using the reference material provided, the student will be able to:

- Describe the functions of the Ovation Process Historian and related components
- Configure scanners and points for collection
- Recognize the Ovation Process Historian database scheme
- Understand the concept of a Relational Database Management System
- Install and configure the Ovation Process Historian Report Manager
- Schedule, automate and manipulate reports
- Create custom reports using third-party applications such as Crystal Reports, MS Excel, MS Access and SQL
- Create historical trends and build global trend groups
- Create historical Point, Alarm, Operator-Event, ASCII and common reviews
- Analyze the Ovation Process Historian with the diagnostic tools available

COURSE OV300

Ovation Troubleshooting

Overview
The OV300 course is designed to provide the end-user with the skills and methods to troubleshoot and repair faults in the data acquisition and control functions of the Ovation system. Students will be required to isolate faults through-out the signal path- from field terminations to I/O modules, through the controller, across the network and onto the graphic display. Multiple problem scenarios will be presented.

Prerequisites
Ovation - Data Acquisition - OV100, Ovation - Building and Maintaining Ovation Control - OV200 and Ovation - Building Ovation Graphics - OV210

Topics
Upon successful completion of this course, using the reference material provided, the student will be able to:

- Identify and resolve selected hardware, system administration and software problems
- Troubleshoot the system using documentation and available tools to analyze system faults or problem conditions
- Interpret system error messages
- Recognize and resolve problems with the system administration tool
- Using a systematic approach to fault analysis, isolate and correct selected network, port and printer faults

COURSE OV310 CEUs : 2.8

Ovation Graphics Advanced

Overview
The OV310 course is designed to provide the end-user with enhanced graphic programming skills. Topics for discussion include: Macros, Pointers, special application programs, trigger statements, sub-routines and correct coding for increased graphic execution speed.

Prerequisites
Ovation - Data Acquisition - OV100, Ovation - Building and Maintaining Ovation Control - OV200 and Ovation - Building Ovation Graphics - OV210

Topics
Upon successful completion of this course, using the reference material provided, the student will be able to:

- Define the different memory segments available in the graphic subsystem
- Build graphics utilizing pointer commands with segmented memory
- Interpret and use the library of application programs
- Use the trigger section of the graphics code for efficiency
- Use graphic commands only available in a text editor
- Troubleshoot graphics code using available tools

COURSE OV270 **CEUs : 3.5**

Ovation with HART and Smart Devices

Overview

This 5-day introductory networking course will provide students with an understanding of general networking concepts, as well as Ovation™-specific network configurations for Fast Ethernet systems. Students will learn the basic networking skills required for general network administration and troubleshooting. Students will also be provided with hands-on knowledge of switch and router configuration for use in Ovation™ systems. This course is intended for Ovation™ network administrators, Ovation™ system administrators and those wishing to Complete the Ovation™ Certification Program.

Prerequisites

Prior completion of the OV230-WIN course is recommended but not required.

Topics

- Explore basic networking concepts including the OSI reference model, MAC addressing, TCP / IP, IP addressing, multicast addressing and local area networks
- Implement an Ovation specific network addressing scheme and network topology
- Define and explore basic network commands
- Define network devices and media and their relation to the OSI reference model
- Configure Cisco 2600 series routers, Cisco3550 series switches and Cisco 2950 switches series for use in an Ovation network (where applicable)
- Configure and implement SNMP for Ovation
- Troubleshoot inter-networked systems with network tools and software
- Configure and apply third-party networking software

COURSE OV360 **CEUs : 3.5**

Ovation Security Administration

Overview

This 5-day course will guide students in the proper planning and installation of security for Ovation™ 2.4 and higher level systems. Students will discuss and come to understand Ovation external and internal security concerns, and learn to apply appropriate safeguards. Students will install and configure Ovation compatible Windows Server 2003 Domain Controllers, Windows XP service packs and Windows security patches. The student will configure Ovation security using the Ovation Security Manager and have a basic understanding of Windows group policy objects.

Prerequisites

This course is designed for students who will administer Ovation™ 2.4-level or higher systems. It is recommended that students attend OV230-WIN and have a basic understanding of Ovation™ system configuration and security concepts prior to attending this course. No prior knowledge of Windows-based security is required.

Topics

- Identify and explain Ovation-specific internal and external security threats
- Plan and implement Ovation 2.4 software installation including Windows 2003 Server, Windows service packs and Windows security patches
- Describe the function of the Ovation Security Manager.
- Create and manage user accounts, computer accounts, and Ovation roles and group policies
- Create and manage Ovation point security groups
- Manage and understand domain policies
- Create and manage Ovation domain administrators
- Design and implement a specific Ovation security configuration Explore the Windows group policy objects

COURSE OV400 **CEUs : 3.5**

Ovation Base Certification

Overview
The OV400 course is offered to the end-user as a stand-alone or web-based exam or implemented with a pre-testing review at the Training Center.
The students proficiency is measured in areas related to database building, control implementation, control graphic linkage and troubleshooting on a system-wide basis. For both offerings, a multi-point examination is administered and participants are required to achieve a grade score >80% to successful gain certification.

Prerequisites
Ovation - Data Acquisition - OV100, Ovation - Building and Maintaining Ovation Control - OV200, Ovation - Building Ovation Graphics - OV210 and Ovation - Troubleshooting - OV300

Topics
Upon completion of this course and achieving a successful level of competency in the online examination, the student will receive an Ovation certification award.
This achievement affirms and recognizes that the student is fully cognizant and possesses the necessary skills to successfully engineer and maintain an Ovation control system for their organization. The student has demonstrated proficiency in the following areas:

- Building saving and implementing the Oracle database
- Constructing control sheets using both Boolean and Analog logic
- Loading and configuring the Ovation Controller
- Designing graphics with control implementation
- Troubleshooting procedures as related to I/O and Controller modules

COURSE OV215 **CEUs : 7.0**

Ovation™ Software Project

Overview

The OV215 course was designed for end-users that require a good overall understanding of the Ovation system software utility packages. The course contains selected elements from the OV100, OV200, OV210, OV230 and OV300 courses.

Topics

- Identify the major components of an Ovation system
- Understand basic Ovation terminology
- Demonstrate basic Ovation operator functions
- Understand data movement in an Ovation system
- Understand the hierarchy and basic right click functions within the Ovation Developer Studio
- Use the Ovation Developer Studio to modify and create points
- Monitor control that has been implemented in an Ovation system
- Interpret and tune implemented control using the available tools
- Build and modify control schemes using the Developer Studio
- Interpret and modify tracking schemes to meet specific control requirements
- Recognize the relationship between control schemes and graphic diagrams
- Implement given control requirements using the Developer Studio
- Evaluate and determine the proper operation of a control scheme using the tools and methods provided

COURSE OV295 **CEUs : 2.1**

Ovation Serial Link Controller / RLC

Overview

This 3-day teaches the students how to create specialized I / O links to non-Ovation™ field devices using both serial link modules and the Ovation™ Ethernet highway. The course covers configuring and loading link controller modules, creating third party points, memory mapping, adding third party drivers to controllers and the Ovation™ addressing requirements.

Prerequisites

Ovation - Data Acquisition - OV100 and Ovation - Building and Maintaining Ovation Control - OV200

Topics

- Understand the Architecture and the functionality of the Ovation™ Fast Switched
- Ethernet Highway, and the need to protect it from external sources
- Define MAC and IP addressing, and Ethernet protocols
- Understand how Ethernet switches work
- Understand the Ovation™ IP addressing requirements
- Understand the various options for connecting Third Party I / O to the Ovation™ Highway
- Understand the Modbus register concept
- Understand the Modbus commands available in Ovation™ releases
- Be Aware of the difference in Modbus Drivers based on Ovation™ Releases
- Be Able to install Ovation™ Modbus drivers
- Be Able to build Ovation™ Point records for communication to Modbus
- Verify successful communications between Ovation™ and a PC Modbus simulation
- Interpret Ovation™ Controller Modbus error codes
- Recognize Fundamental AB Data Files
- Be Able to install Ovation™ Allen-Bradley Drivers
- Be Able to build Ovation™ Point records to communicate to an AB SLC500
- Verify successful communications between Ovation and the AB SLC500

COURSE OV365 **CEUs : 3.5**

Ovation Security Center

Overview

The OV365 consists of a suite of security modules designed to assist the end-user in reducing the cost of complying with the NERC CIP standards. The security modules functions include Vulnerability Scan and Patch Management (VSPM), Malware Prevention (MP) and Security Incident and Event Management (SIEM). The course covers the configuration, implementation and administration of the aforementioned modules. The course supports Ovation 2.4 and newer for the Windows environment and Ovation 1.7.2 and newer for the Solaris environment.

Prerequisites

Ovation - Network Administration - OV320 and Ovation - Security Administration - OV360

Topics

Upon successful completion of this course, using the reference material provided, the student will be able to:

- Identify the modules of the Ovation Security center
- Demonstrate the Patch Management module
- Demonstrate the Malware Prevention module
- Demonstrate the Security Incident and Event Management module
- Demonstrate the Anti-Virus module
- Implement new Virtual Machines into the Virtual Host machine
- Recommend proper management techniques for the modules

COURSE OV216 **CEUs : 3.5**

Ovation Hardware Project

Overview
The OV216 course is designed for the end-user whose primarily interest and/or assignment is maintaining Ovation hardware. Selected topics from several courses are incorporated and expanded upon. Topics included are the replacement and set-up of an Ovation Controller and Flask Disk. Several different power supply configurations are discussed. Attendees will install new I/O Thermocouple/RTD modules and build several temperature derived points. Students will install a HART (4-20)ma analog input module and transmitter. Each student will install and configure an Ovation Remote Node Controller with fiber connections.

Prerequisites
Ovation - Data Acquisition - OV100 and Ovation - Building and Maintaining Ovation Control - OV200 or Ovation - Software Project - OV215

Topics
Upon successful completion of this course, using the reference material provided, the student will be able to:

- Utilize documentation to analyze faults or problem conditions in the Ovation System
- Interpret Ovation system error messages
- Demonstrate remote I/O technology
- Understand recovery or hard-drive failures on MMI's
- Configure CISCO switches and routers
- Monitor status LED's of the Ovation system
- Build various RM records
- Implement closed loop control strategies
- Evaluate and determine operation of power supplies

COURSE OV370 **CEUs : 3.5**

Ovation Turbine Control System

Overview
The OV370 is designed to afford the end-user with in-depth knowledge on the Ovation Turbine Control System (TCS). A hydraulic test stand with LVDT's and Servo Valves will be used to demonstrate turbine operation and graphics. The course includes defining I/O points, RVP and speed modules, calibration and troubleshooting exercises of the speed detector and valve positioner modules. Students will also demonstrate RVP card tuning.

Prerequisites
Ovation - Data Acquisition - OV100 and Ovation - Building and Maintaining Ovation Control - OV200

Topics
Upon successful completion of this course, using the reference material provided, the student will be able to:

- Review the history of the steam turbine
- Review and evaluate typical turbine control logic
- Discuss the LVDT and speed probe functionality
- Configure I/O points for RVP and speed cards
- Configure and set up the RVP and speed I/O modules
- Using a hydraulic valve test stand connect an LVDT and servo valve for simulation
- Discuss troubleshooting procedures for LVDT's and servo valves
- Discuss and setup hyperlink terminal to RVP cards
- Perform LVDT tests and setup using the valve calibration graphic and hyperlink terminal
- Tune the RVP card in conjunction with the hydraulic test stand
- Using a speed wheel test the speed probes

COURSE OV380 **CEUs : 3.5**

Ovation™ Boiler Control

Overview

This 5-day course is designed for customers who maintain or troubleshoot control strategies within the Ovation™ DCS system related to boiler control. This course is intended for students who will implement their own control programs, or who will make significant modifications to existing programs. Using previous control building knowledge, the student will learn how to implement design pertinent to boiler controls in an Ovation™ environment. This course is a continuation of the control topics discussed in more basic control classes. The course will emphasize the proper selection, configuration and application of algorithms in a typical Ovation™ boiler control system.

Prerequisites

Prior completion of OV200-WIN and OV330- WIN is strongly recommended.
A working knowledge of control systems and control theory is required.

Topics

- Recognize the terminology used with an Ovation SIS
- Describe the functions of the Ovation SIS network and its components
- Describe the general architecture of an Ovation SIS
- Monitor Ovation SIS using the data acquisition tools
- Configure an Ovation SIS network and SIS Controller

COURSE OV420 **CEUs : 3.5**

Ovation™ (Admin) Certification

Overview

This 5-day course is offered as a stand-alone web-based exam or implemented with a pre-testing review at the Training Center, the OV420-WIN measures the student's proficiency in areas that address the overall Ovation system configuration while maintaining the integrity of the system software. It assesses the students understanding of networking concepts and that of switch and router configurations. Achieving Admin Certification acknowledges the competency of the individual in maintaining the integrity of the Ovation system concerning user access and capabilities. A multi-point examination is administered and participants are required to achieve a grade score of 80% or greater to successfully gain certification.

Prerequisites

Students should have achieved Ovation (Base) Certification through the OV400WIN program. Students are required to attend the OV230-WIN, OV320-WIN and OV245-WIN courses.

Topics

Upon successful completion of this course, the student will receive Ovation (Admin) Certification. This accreditation affirms that the student is competent in all areas of the Ovation System and possesses the abilities and understanding to engineer and supervise the system integrity, communications and user capabilities.

COURSE RA331 **CEUs : 1.4**

Energy and Transportation Solutions ControlWave Troubleshooting Configuration

Overview

This 2-day hands-on course covers the hardware, troubleshooting, configuration and maintenance of the ControlWave product family. This course will equip you with the necessary knowledge and practice needed to troubleshoot common problems and configure the ControlWave hardware. Learn to utilize software application programs to perform diagnostics and monitor live data and communication statistics.

Prerequisites

- Participants must be thoroughly familiar with Windows 2000 / XP or later versions
- Participants should have formal instrument technician training and a working knowledge of their application / process

Audience

Field personnel whose responsibilities may include: installation, wiring, start-up, troubleshooting, configuration or maintenance of the ControlWave products. An individual who seeks a more thorough understanding of the ControlWave products.

COURSE RA441 **CEUs : 2.5**

Energy and Transportation Solutions ControlWave Designer Introduction

Overview

This 2-1 / 2 day hands-on course covers programming the ControlWave product family using the ControlWave Designer IEC61131-3 software and the Designer function block library. This course will provide the participant the necessary knowledge and skills required to define and control inputs and outputs of related real world applications. Participants will generate and debug simple control strategy programs using Function Block, Ladder Logic, Structured Text, and Sequential Function Chart programming. They will also learn the basics of ControlWave communications, historical data storage, alarming, hardware configurations and much more.

Prerequisites

- Participants must have a strong working knowledge of personal computers and Windows XP or a later version
- Participants should have a strong working knowledge of their application / process

Audience

Personnel responsible for programming and debugging in ControlWave Designer programming software.

COURSE RA442 **CEUs : 2.1**

Energy and Transportation Solutions ControlWave Designer Communication Programming

Overview

This 1-1 / 2 day course is a continuation of ControlWave Designer Fundamentals course focusing on networking and communications. Participants will program the ControlWave to communicate to other devices in a network, as well as transfer and receive signal lists using serial and IP communications. Other application software will be utilized to configure, establish, and debug communications with these devices. Participants will learn the advanced methods of communicating to Bristol and ControlWave devices using Client / Server modules, and to Modbus protocol devices using custom function blocks

Prerequisites

- Successful completion of course RA441, ControlWave Designer Fundamentals
- Participants must have a strong working knowledge of personal computers and Windows XP or later version
- Participants should have a strong working knowledge of their application / process

- Audience

Personnel responsible for the establishing of communication interfaces to ControlWave Automation products

COURSE RA900 **CEUs : 1.4**

Energy and Transportation Solutions FloBoss S600+ / Config600 Introduction

Overview

The 2-day FloBoss S600+ Fundamentals virtual course will have participants

- Become familiar with the FloBoss S600+ hardware, the start up menu, fundamental features of the S600+ applications.
- Be able to operate FloBoss S600+ front panel and web-server.
- Be able to download and upload configurations.
- Be able to edit S600+ configuration files using PC Setup, Report Editor, Modbus Editor and Display Editor.

The FloBoss S600+ Fundamentals course provides an overview into the hardware and operational aspects of the FloBoss S600+ flow computer.

Prerequisites

- Participants should be familiar with metering techniques and standards
- Participants should bring their own laptop computers to the course and should preferably have administrator privileges
- Participants must be PC literate

Topics

- Introduction to S600+
- Standard Application Overview
- S600+ Hardware Overview
- Navigating Displays
  Editing Display Items
- Editing Configurations with Config600
- Using Config600 Transfer

COURSE RA901 **CEUs : 2.1**

Energy and Transportation Solutions FloBoss S600+ / Config600 Advanced

Overview

The 3- day advanced virtual course provides an insight into the generation of application configurations for the FloBoss S600+.

Prerequisites

- Participants should be familiar with metering techniques and standards
- Participants should bring their own personal computer to the course and should have administrative privileges
- Participants must be PC literate
- Participants must have attended the RA900

Topics

- Loading Config600 Pro Software License
- Firmware Versions
- Using System Editor Object Types
- Logical Editor
- Registering Tickets
- Do's and Don'ts

Audience

This FloBoss S600+ Advanced Course is aimed at application engineers and system integrators who design and develop FloBoss S600+ applications for integration with metering systems and skids.

COURSE RA902 **CEUs : 3.2**

Energy and Transportation Solutions FloBoss S600+ Combined Config600

Overview

The 4½-day course will provide participants hardware knowledge of the S600+. How to navigate the keypad display and be able to create and edit S600+ configurations using Config600 software. The FloBoss 600+ Combined Course is a combination of both the fundamentals course and the advanced course in one.

Prerequisites

- Participants should be familiar with metering techniques and standards
- Participants should bring their own laptop computers to the course and should have administrative privileges
- Participants must be PC literate

Topics

- Standard Application Overview S600+
- Hardware Overview Navigating Displays
- Editing Display Items
- Editing Configurations with Config600 Using Config600
- Transfer Loading Config600 Pro Software License
- Firmware Versions
- Using System Editor Object Types
- Logical Editor
- Registering Tickets
- Do's and Don'ts

COURSE RA801 **CEUs : 3.2**

Energy and Transportation Solutions OpenEnterprise SCADA Systems V3.x Introduction

Overview

This 4 day course provides a very brief introduction to the OpenEnterprise Server, and more detailed coverage of the OpenEnterprise Workstation and OpenEnterprise Reporting packages (version 3.x). At the conclusion of the class, students will be able to install a simple OE Server and Workstation, configure communications with Remote Automation Solution's RTU's and then begin building HMI displays, trends, alarm windows, and develop a basic user interface using these products.

Prerequisites

- Participants must have a strong working knowledge of personal computers & Windows 7
- Participants must have a strong working knowledge of their application / process
- Participants should have a strong working knowledge of Remote Automation Solutions RTUs

Audience

The class is intended for users who have experience with programming and configuration of Remote Automation Solutions RTUs.

COURSE RA802 **CEUs : 3.2**

Energy and Transportation Solutions OpenEnterprise SCADA Systems V3.x Intermediate

Overview

This 4 day course will equip the participant to be able to; configure the communications, security, historical, alarming, asset modeling and other major subsystems of an OpenEnterprise and Workstation (version 3.x). Most of the tools within the OpenEnterprise Administrative Tools will be covered during this class.

Audience

The course is intended for users who have experience with programming and configuration of Remote Automation Solutions RTUs.

Prerequisites

- Participants should have formal RTU configuration training and a working knowledge of their application / process
- Participants must be thoroughly familiar with Windows 7
- Participants should have advanced PC and networking skills
- Participants must have completed course RA801 Basic OpenEnterprise Course ver. 3.x

COURSE RA1220 **CEUs : 3.2**

Energy and Transportation Solutions OpenEnterprise SCADA Systems V3.x Intermediate

Overview

This 4-1 / 2 day course will provide an overall working knowledge of the FloBoss 103, FloBoss 107. Participants are presented with a comprehensive view of the FloBoss 103 / 107 hardware and ROCLINK800 software to obtain the necessary knowledge needed to effectively install, configure and maintain the FloBoss 103 / 107 products. Each student will be provided with a PC (ROCLINK800 preinstalled), a FloBoss 107RTU, a communications cable and a workbook for the duration of the class. However, participants are encouraged to bring their laptop to class.

Prerequisites

Knowledge of their application / process and should also have advanced PC knowledge and be thoroughly familiar with Microsoft Windows operating systems (XP or later versions).

Topics

- Flow Measurement Review
- FloBoss 103 / 107 Hardware Overview
- FloBoss
- Check and Set ROC Information
- Check and Set ROC System Flags
- Communication Basics
- Elements of a Basic Configuration
- Configuring I / O Points
- Calibrating AI and AO Points
- Overview of MVS Products
- Setup of Multi-dropping of MVS
- Configuring AGA Flow Calculations
- Configuring FloBoss History
- Modbus Tables
- PID Configuration
- Building FloBoss Displays
- FST Workshop

Audience

This Remote Automation Solutions course is for engineers, technicians and others involved with the configuration & operation of the FloBoss 103 & 107 products.

VALVES, ACTUATORS AND REGULATORS

Final Control Training Facility

The Final Control education center is a fully equipped training laboratory built to serve students hands on and virtual experience that support job functions in vast areas such as Senior technicians, Valve or Mechanic technicians, Valve Engineers and more.

KEY FEATURES

- A state-of-the-art dedicated training room able to accommodate 12 students in comfort
- Audio visual: 165 inch LED screen and 70 inch interactive touch screen TV with higher resolution and brightness.
- Radio mic with ambient sound for the instructor
- Workstations: 6 live workstations for Control & Isolation valves, PRV, & Electric Actuators. HART & Foundation Fieldbus suited with own PC's and double monitors, connected through Wi-Fi

COURSES OFFERINGS AVAILABLE:

- IACET compliant Emerson Standard Courses
- Courses on Fundamentals of Digital Valve Controllers, Control Valve Engineering, Pressure Relief Valves and more.
- Competency Development Programs

OPPORTUNITIES:

- Train new hires and improve your current workforce's skills
- Utilize Virtual classroom or a blended learning approach
- Certified instructors will share their knowledge and experience of valves, regulators and actuators through lecture and hands on workshops.

FINAL CONTROL

Learning Path

At the foundation of any process are the field devices that measure and control the flow of air, steam, water, gas or hundreds of other materials. Without proper basic setup, calibration and configuration of these devices, advanced control techniques cannot provide the levels of efficiency the technology is capable of. Knowledge of process control devices within a plant is often passed down from generation to generation. At the same time, if advances in process technology and methodology usually brought about by training aren't brought into the plant, in-house standards for device setup and maintenance can become based on outdated theory. The result is that while a valve or instrument may be working, it may not be working up to its capabilities and is not delivering on its promised performance. Educational Services has made a global commitment to helping our customers find and keep that promise of performance.

Factory Training

At our Dubai & Jubail training facilities, we host factory training courses in which the student will attend class in our fully equipped training laboratory. Our courses include small group hands-on sessions, one-on-one time with instructors and a facility tour in the factory. Our workshops are simply the best investment you can make today in your employees and your business.

Regional Training Center

Our regional training center at RLIC Qatar is strategically located to support your training needs when and where you need it. Our fully equipped training laboratory allows us to host the same training courses as in Dubai & Jubail.

On-site, Local Training

We offer on-site training subject to availability of dedicated classroom facilities and suitable workshop locations so that we can maintain the same high standards of education at site.

eLearning Courses

Are a convenient and flexible way to manage your time and costs. Browse an online catalog of the latest eLearning courses on a variety of technical topics.

You can purchase directly from eStore with a credit card or provide a PO to **mea.education@emerson.com**

FINAL CONTROL ELEMENTS

Learning Path

Training Facilities

- A state-of-the-art **dedicated training room** able to accommodate 12 students in comfort
- Audio visual: **165 inch LED screen** and **70 inch interactive touch screen TV** with higher resolution and brightness.
- **Radio mic with ambient sound** for the instructor
- Work stations: 6 **live work stations** capable of both Hart and Fieldbus communications with their **own PC's and double monitors**, connected through **Wi-Fi** to the main AV stations allowing any 4 students on the main screen simultaneously
- Broadcast: **self tracking video cameras** for broadcasts and recording of sessions, plus independent **live video conferencing**

Valve Engineer

- e1310 — Control Valve Fundamentals
- 1300 — Fisher Control Valve Engineering - Introduction
- 1325 — Fisher Control Valve Engineering - Intermediate
- 1350 — Fisher Control Valve Engineering - Advanced
- 1751 — Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile - Introduction
- 1752 — Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers
- 7036 — Fisher FOUNDATION™ Fieldbus FIELDVUE™ Digital Valve Controllers
- 1759 — Fisher Diagnostic Data Interpretation Using ValveLink Software for Fieldvue

Senior Technician

- e1310 — Control Valve Fundamentals
- 1400 — Fisher Valve Trim & Body Maintenance
- 1751 — Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile - Introduction
- 1752 — Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers
- 7036 — Fisher FOUNDATION™ Fieldbus FIELDVUE™ Digital Valve Controllers
- 1759 — Fisher Diagnostic Data Interpretation Using ValveLink Software for Fieldvue
- 1766 — FIELDVUE™ Digital Valve Controller - SIS Setup with Valvelink™ Software

Instrument Technician

- e1310 — Control Valve Fundamentals
- 1751 — Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile - Introduction
- 1752 — Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers
- 7036 — Fisher FOUNDATION™ Fieldbus FIELDVUE™ Digital Valve Controllers

Valve Mechanic or Maintenance Technician

- e1310 — Control Valve Fundamentals
- 1400 — Fisher Valve Trim & Body Maintenance
- 1751 — Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile - Introduction

COURSE E1310 **CEUs : 2.1**

Control Valve Fundamentals

Overview

The Control Valve Fundamentals module is designed to provide participants with essential knowledge of control valve principles, components, and applications. The course introduces industry standards, valve types, actuators, positioners, and accessories, helping learners build a strong foundation for understanding valve operation and performance in process control systems.

Students who complete this course will be able to:

- Understand the role and importance of control valves in process control systems.
- Identify and explain the basic types of control valves, including sliding stem and rotary valves.
- Recognize the functions and applications of actuators, positioners, and valve accessories.
- Interpret control valve flow characteristics and their impact on system performance.
- Apply fundamental knowledge of control valve standards and best practices.

Prerequisites

- Basic understanding of process control concepts.
- Familiarity with fluid mechanics and instrumentation (recommended but not mandatory).
- No prior experience with valves is required.

Topics

- Introduction to Control Valves
- Control Valve Flow Characteristics
- Sliding Stem Control Valves
- Sliding Stem Actuators
- Ball Valves and Eccentric Plug Valves
- Butterfly Valves
- Rotary Actuators
- Positioners
- Control Valve Accessories

COURSE 1300 **CEUs : 2.1**

Fisher Control Valve Engineering Introduction

Overview

This course is for engineers, technicians and others responsible for the selection, sizing and application of control valves, actuators and control valve instrumentation. This 3-days course reviews design and operating principles of control valves, actuators, positioners and related accessories. It describes the sizing and selection methods for a broad variety of control valve assemblies. Students will solve several problems using Fisher Specification Manager and published materials, plus participate in equipment demonstrations and hands-on workshops.

Students who complete this course will:

- Select the proper valve characteristic for a given process
- Choose suitable styles of control valves for an application
- Size of control valves and actuators
- Properly apply positioners and instruments

Prerequisites

Some experience with industrial controls equipment including control valves and actuators would be helpful.

Topics

- Control Valve Selection
- Rotary / Sliding Stem
- Actuator Selection and Sizing
- Corrosion Resistant Valves
- Liquid Valve Sizing
- Gas Valve Sizing
- Positioners and Transducers
- Valve Application Guidelines
- Valve Characteristics
- Valve Packing Considerations

The twin forces of advancing technology, exemplified by the rapid acceptance of **FIELDVUE digital valve controllers**, and the merging of the **valve and instrument technician crafts** in many plants are making control valve education more important today than ever before. These interrelated trends necessitate higher levels of education on the part of those responsible for valve maintenance and operation.

COURSE 1325 **CEUs : 0.7**

Fisher Control Valve Engineering II

Overview

This course is designed for engineers, technicians, and others responsible for the selection, sizing, and application of control valve assemblies. This 1-day course event consists of two parts, 4 hours for each part. It reviews design and operating principles of control valves in various applications. It describes the sizing and selection methods utilized in selecting appropriate control valve assemblies, as they relate to severe service applications such as noise and cavitation. Students will solve several advanced sizing and selection problems using Fisher Specification Manager software and published materials. Students will also have the opportunity to ask Emerson certified instructors for Fisher engineering courses to clarify questions and assist in better understanding of these advanced fluid mechanic ideas. Students who successfully complete this course will:

- Size control valves and trim for cavitating application
- Size control valves and trim for a noisy application
- Choose suitable styles of control valves for an application
- Size control valves for an erosive and / or corrosive application
- Properly apply knowledge learned from 1300

Prerequisites

Successful completion of 1300 is required. Familiarity with sizing, selection,and advanced applications of control valves is strongly encouraged.

Topics

- Cavitation and Flashing
- Noise
- Corrosion
- Erosion
- Valve Application Guidelines

COURSE 1350 **CEUs : 2.1**

Fisher Control Valve Engineering Advanced

Overview

This 3-day course reviews advanced application-specific design and operating principles of control valve assemblies, instruments, and accessories installed in a variety of non-general service applications. Students will gain insight in sizing and selection methods utilized in selecting appropriate control valve assemblies, as they relate to advanced control topics. Fisher Specification Manager software, combined with published reference materials, will be used to solve several advanced sizing and selection problems. Students will also have the opportunity to ask Emerson certified Fisher engineering instructors clarifying questions to firmly understand the advanced fluid mechanics covered in this course.

Prerequisites

Completion of Control Valve Engineering I 1300 or have equivalent experience (minimum of two years specifying control valves and instrumentation). Familiarity with Fisher Specification Manager is required.

Topics

- Review of Control Valve Selection Guidelines
- Liquid Sizing
- Gas Vapor Sizing
- Actuator Sizing Guidelines
- Stroking Speed
- Negative Fluid Force Gradients
- Two Phase Sizing
- Sizing Hydrocarbon Mixtures
- Advanced Cavitation
- Advanced Aerodynamic Noise

Audience

This course is for practicing engineers and senior technicians who are seeking advanced training in control valve selection and sizing, and application problem solving.

The twin forces of advancing technology, exemplified by the rapid acceptance of **FIELDVUE digital valve controllers**, and the merging of the **valve and instrument technician crafts** in many plants are making control valve education more important today than ever before. These interrelated trends necessitate higher levels of education on the part of those responsible for valve maintenance and operation.

COURSE 1400 **CEUs : 2.1**

Fisher Valve Trim & Body Maintenance

Overview

This 3-days course explains how valves and actuators function and how they are installed and calibrated. It emphasizes installation, troubleshooting, parts replacement, and calibration of control valves, actuators, and digital valve controllers. Those who complete this course will be able to:

- Correctly perform installation procedures
- Perform basic troubleshooting
- Properly apply and calibrate, FIELDVUE
- Digital valve controllers
- Change valve trim, gaskets and packing

Prerequisites

Some experience in instrument calibration and in control valve maintenance, installation, and operation would be helpful.

Topics

- Control Valve Terminology
- Globe Valves
- Packing
- Actuators, and Digital Valve Controllers
- Bench Set
- Seat Leak Testing
- Ball Valves
- Butterfly Valves
- Eccentric Disc Valves
- Valve Characteristics

Audience

This introductory course is for valve mechanics, maintenance personnel, instrument technicians, and others who are responsible for maintaining control valves, actuators and control valve instrumentation.

COURSE 1751 **CEUs : 2.1**

Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction

Overview
This 3-day course provides hands-on experience working with FIELDVUE digital valve controllers using an AMS Trex Communicator. The class will discuss basic operation and installation of the FIELDVUE digital valve controllers. Students will practice installing and mounting FIELDVUE digital valve controllers onto sliding stem and rotary control valve assemblies, as well as perform basic configuration and calibration of FIELDVUE Instruments. Troubleshooting the digital valve controller using ValveLink Mobile software will be performed and basic data interpretation will be introduced.

Prerequisites
Some experience in instrument calibration and in control valve maintenance, installation, and operation would be helpful.

Topics
- Basics of Positioner Operation
- FIELDVUE Digital Valve Controller
- Emerson Field Communicators
- Connecting to Device using ValveLink Mobile
- FIELDVUE DVC6200 Configuration & Calibration Using Emerson Communicator
- Digital Valve Controller Basic Troubleshooting with ValveLink Mobile
- FIELDVUE Digital Valve Controller Detailed Setup with ValveLink Mobile
- Digital Valve Controller Spec Sheet with ValveLink Mobile
- Digital Valve Controller Write Protection with ValveLink Mobile
- Advanced Diagnostics with ValveLink Mobile
- Performance diagnostics with ValveLink Mobile

Audience
This course is for technicians, engineers and others responsible for installing, calibrating and basic troubleshooting FIELDVUE instruments using the AMS TREX Field Communicator.

COURSE 1752 **CEUs : 2.1**

Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers

Overview
This 3-day course provides hands-on experience working with FIELDVUE digital valve controllers and ValveLink software. Students will be able to execute ValveLink software calibration and diagnostic routines, and create an instrument database.

Prerequisites
Some experience in instrument calibration and in control valve maintenance, installation, and operation would be helpful.

Topics
- Basics of Positioner Operations
- FIELDVUE™Digital Valve Controller
- ValveLink™Software Overview
- Connecting to HART® Device using HART Modem
- FIELDVUE™DVC6200 Configuration and Calibration with ValveLink Software
- Digital Valve Controller Detailed Setup With ValveLink Software
- Digital Valve Controller Basic Troubleshooting with ValveLink Software
- Digital Valve Controller Write Protection with ValveLink Software
- Advanced Diagnostics with ValveLink Software
- Batch Runner with ValveLink™Software
- Performance diagnostics with ValveLink Software
- Scheduler with ValveLink Software
- Network Scan with ValveLink Solo
- Trending With ValveLink Solo

Audience
This course is for technicians, engineers and others responsible for installation, calibration and diagnostics for FIELDVUE digital valve controllers and ValveLink software. The primary focus of this course is to provide a comprehensive experience in managing digital valve controllers using the ValveLink software.

Courses for valve and instrument technicians explain what's required to **maintain modern control valves and demonstrate the skills necessary to do that job effectively**. These classes are very structured, but students have plenty of opportunities to practice newly learned skills and receive feedback from experts in the field. The goal is to **reduce the number of poorly operating control valves throughout industry in order to enhance processing and reduce downtime.**

COURSE 7036 **CEUs : 2.1**

Fisher FOUNDATION™ Fieldbus FIELDVUE ™ Digital Valve Controllers

Overview

This course teaches technicians and engineers the basics of FOUNDATION™ fieldbus digital valve controller installation, configuration, calibration and troubleshooting using AMS Trex Field Communicator and ValveLink™ Software. The 3-days course is designed for the reviews of the role and function of control valve positioners, followed by a series of hands-on exercises to disassemble, inspect, assemble, install and commission a fieldbus FIELDVUE™ digital valve controller. During commissioning students will learn the basics of the FOUNDATION™ fieldbus protocol, the role of function blocks, addressing, modes and status. Students will configure, calibrate and commission devices using the AMS Trex Communicator and ValveLink™ software. Hands-on exercises also teach students how to perform detailed setup routines and how to run and collect data for various ValveLink™ diagnostics.

Prerequisites

Basic familiarity with positioners and control valve basics is required. Course 1400 / 1451 is recommended.

Topics

- Positioner Basics
- FOUNDATION™ Fieldbus Overview
- FIELDVUE™ digital valve controller Installation and Mounting
- Modes and Status
- Configuration and Calibration with new 475 Field Communicator
- ValveLink™ Setup Wizard / Detailed Setup
- Tuning
- Tag Management
- Pressure Control
- Valvelink™ Diagnostics
- FIELDVUE™ Instrument
- Troubleshooting

COURSE 1759 **CEUs : 2.1**

Fisher Diagnostic Data Interpretation Using ValveLink Software for FIELDVUE

Overview

This 3-days course uses practical exercises and discussions to teach the student to interpret and analyze diagnostic data obtained using FIELDVUE™ Digital Valve Controllers and ValveLink software. Students will perform diagnostic tests on a variety of valve / actuator combinations and use the data to determine bench set, dynamic error band, seat load, spring rate and other pertinent parameters. Students will also perform comparison tests on valves / actuators containing assembly or operating flaws and use the data for troubleshooting purposes.

Prerequisites

Students must have completed one of the following: 1751, 1752, 7036, or 1760V Series (1760V, 1761V, 1762V, 1763V). Completion of 1400, 1700, and 1450 are recommended if additional experience with valve maintenance and basic troubleshooting is needed

Topics

- An Orderly Approach to Diagnostics
- Documenting and Verify Current Configuration
- Verifying The Specification Sheet
- Status Monitor
- Step Response Test
- Dynamic Scan (Total Scan)
- Signature Interpretation
- Performance Diagnostics
- Import and Export Tag Data with ValveLink™ Software
- Scheduler
- Batch Runner with ValveLink™ Software
- Report Generator
- DVC Tiering

Audience

This course is for technicians, engineers and others responsible to collect and interpret valve diagnostic tests performed using Valvelink™ software.

COURSE 1766 **CEUs : 2.1**

FIELDVUE DVC 6200 SIS Setup with ValveLink Software

Overview

This 3-day course are to provide the background and exercises that will allow the student to:

- · Configure and Calibrate a FIELDVUE DVC 6000 SIS Digital Valve Controller.
- · Run and interpret a Partial Stroke Test
- · Define and edit key SIS parameters
- · Understand and manage SIS alerts

Prerequisites

Familiarity with Fisher Controls' Digital Valve Controller (FIELDVUE™ DVC) will be very helpful.

Audience

Participants in this course are engineers, technicians, mechanics, and other personnel who are required to specify, install, configure, calibrate, and / or maintain the SIS Tier Fisher Controls Digital Valve Controller (FIELDVUE DVC)

COURSE PRM-MEA-101 **CEUs : 0.7**

Pressure Relief Valve Overview

Overview
This 1-day course explains how pressure relief valves function and how they are installed and tested. At the end of the course the attendees will be familiar with various Pressure Relieving Devices, their design, operation, maintenance, calibration, testing and installation. The course also covers the causes of improper valve performance. Those who complete this course will be able to:

- Understand the reasons for & history of pressure relieving devices.
- Gain knowledge on design considerations.
- Understand the basic terminologies used

Prerequisites
Some experience in valve maintenance, design concepts, installation, and operation would be helpful.

Topics

- Pressure relief valve types
- An overview of Codes & standards
- Basic Valve Operation
- Initial troubleshooting

Audience
This introductory course is for valve mechanics, mechanical inspectors, piping engineers, mechanical maintenance personnel, instrument technicians, and others who deal with pressure relieving device management and maintenance.

COURSE PRM-MEA-102 **CEUs : 3.5**

Direct Spring Operated Pressure Relief Valve Maintenance ASME VIII

Overview
This 5-day course caters for maintenance personnel dealing with pressure relief valves. Upon completion of the course, the candidates will be able to overhaul, fault find, calibrate and test Pressure Relief Valves utilizing the relevant maintenance instructions.

Prerequisites
Some experience in valve maintenance, design concepts, installation, and operation would be helpful.

Topics

- Terminology
- Valve Types & Operation
- Codes and Standards
- Temperature / Back Pressure Compensation
- Causes of Improper Performance
- Type Numbering
- Machining of Valve Components
- Practical Valve Engineering
- Troubleshooting

Audience
This is a workshop style course that includes "hands on" overhaul and test procedures, along with practical and written assessment. It is intended for workshop supervisors, valve mechanics, mechanical maintenance personnel, instrument technicians, and others who deal with pressure relieving device management and maintenance.

COURSE PRM-MEA-103

High Pressure Pilot Operated Pressure Relief Valve Maintenance

Overview
This 18-hour course caters for maintenance personnel dealing with High Pressure Pilot Operated pressure relief valves. Upon completion of the course, the candidates will be able to overhaul, fault find, calibrate and test ASME Sec VIII HP Pilot Operated Pressure Relief Valves utilizing the relevant maintenance instructions. It is recommended to attend a follow-up training session PRM-MEA-103W which is a 1-day practical hands-on event. Assessment Certification, achieved by written and practical examination, is valid for three years.

Topics

- Terminology
- Valve Types & Operation
- Codes and Standards
- Causes of Improper Performance
- Pop action vs modulating action pilots
- Type Numbering
- Practical Valve Engineering
- Troubleshooting

Audience
This is a virtual workshop style course that includes "demonstration hands on" of overhaul and test procedures, along with written assessment. It is intended for workshop supervisors, valve mechanics, mechanical maintenance personnel, instrument technicians, and others who deal with high pressure pilot operated pressure relieving device management and maintenance.

Prerequisites
Some experience in valve maintenance, design concepts, installation, and operation would be helpful.

As the world-wide leading provider of precision pressure relief devices & industrial regulators with such brands as Fisher, Anderson Greenwood, Crosby, and Varec, we are committed to provide the technical assistance needed to help designers and engineers **meet pressure vessel code requirements and attain optimum pressure relief valve performance.**

COURSE PRM-MEA-104

Recertification for Direct Spring OR High-Pressure Pilot Operated Valves ASME VIII

Overview
This 2-day course is intended for Mechanical, Instrument, Process Supervisors & Technicians who have undertaken the "5 Day Pressure Relief Valve Maintenance Course or 5 Day Pilot Valve Maintenance Course" within the last 3 years and have documented evidence of PRV Maintenance during the certification period. A minimum of 4 cases of evidence per year is requested.

Method
A certificate is awarded on successful completion of the assessment, which is valid for 3 years. If there is insufficient or no documented evidence then a 3-day refresher course will be required to be completed for recertification.

COURSE PRM-MEA-105

Pressure / Vacuum Valve Familiarization Overview

Overview
This 3-day course caters for maintenance personnel dealing with pressure / vacuum valves. Upon completion of the course, the candidates will be able to understand working principle of these mechanical devices, fault find, calibrate and test Pressure / Vacuum Valves utilizing the relevant maintenance instructions & testing equipment.

Prerequisites
Some experience in valve maintenance, design concepts, installation, and operation would be helpful.

Topics
- Terminologies
- Basic Tank operating principles
- Pressure / Vacuum valve operating principles
- Valve Types & Operation
- Codes and Standards
- Type Numbering

Audience
This is a classroom & workshop style course that includes "hands on" overhaul and test procedures, along with practical and written assessment. It is intended for workshop supervisors, valve mechanics, mechanical maintenance personnel, and others who deal with pressure / vacuum relieving device management and maintenance.

COURSE PRM-MEA-106

Low Pressure Pilot Operated Valves Maintenance

Overview
This 3-day course caters for maintenance personnel dealing with low pressure pilot operated valves. Upon completion of the course, the candidates will be able to understand working principle of different styles of low-pressure pilot operated valves, fault find, calibrate and test utilizing the relevant maintenance instructions & testing equipment.

Prerequisites
Some experience in valve maintenance, design concepts, installation, and operation would be helpful.

Topics
- Terminologies
- Low Pressure Pilot valve operating principles
- Codes and Standards
- Type Numbering

Audience
This is a classroom & workshop style course that includes "hands on" dis-assembly / re-assembly and test procedures, along with practical and written assessment. It is intended for workshop supervisors, valve mechanics, mechanical maintenance personnel, and others who deal with low pressure pilot operated valves management and maintenance.

COURSE 1100

Gas Regulator Technician

Overview
This 3-day course is designed primarily for technicians responsible for the installation and maintenance of natural gas regulators. Emphasizing hands-on training, this course teaches students to install, troubleshoot, and adjust gas regulators. Students who complete this conference will be able to:
- Perform maintenance on regulators and relief valves
- Troubleshoot field problems

Prerequisites
At least one year's field experience with natural gas regulators is recommended.

Topics
- Self-Operated Regulators
- Pilot-Operated Regulators
- Overpressure Protection
- Series Regulation
- Monitors
- Slam Shut Options
- Regulator Failure Analysis
- Troubleshooting and Installation

Audience
This course is designed primarily for technicians responsible for the installation and maintenance of natural gas regulators.

COURSE ACT-MEA-101 **CEUs : 0.7**

Emerson Electric Actuators Overview

Overview

This 1-day course discusses on Emerson's next generation portfolio of compact electric actuators for quarter-turn and multi-turn applications. Brands like Bettis, Biffi, & EIM along with different models and application will be discussed to give the audience a general overview of these versatile valve actuation packages. This course is for technicians, engineers and others who wish to understand the basic concepts for electric actuator functionality, principles of operation, selection criteria & best practices for maintenance.

Topics

- Bettis electric product portfolio
- Biffi Electric product portfolio
- Basic concepts
- Principle of operation
- Selection of electric actuators
- Maintenance practice

COURSE VA-MEA-201 **CEUs : 2.1**

Bettis and Biffi Scotch-Yoke Products, and Biffi, El-O-Matic & FieldQ Rack & Pinion Products Servicing

Overview

This 3-day class provides comprehensive information concerning the installation, operation and maintenance of all Bettis Scotch-Yoke Products, EL-O-Matic & FieldQ Rack & Pinion Products.

Prerequisites

Involved with the purchase / application / marketing or sales of products

Topics

- Instruction / Maintenance
- Instruction Manuals
- Product Serial Numbers Review
- Service Procedure Index Review
- General Operating / Maintenance Instructions
- General Servicing information on G, CBA300, CBB-Series, ALGA, ALGAS, RPD, RPS-Series; F, E, P-Series and FieldQ-Series
- Conversion of Fail Action in G-Series Actuators
- 2-days of practical exercises involving the disassembly / reassembling of Products

Actuation Technologies combines the strengths of six world-recognized brands; **Bettis, Biffi, El-O-Matic, Hytork, FieldQ, and Shafer** into a single unit. We capitalized on more than 100 years of combines experience dedicated to only one thing controlling and automating valve operation.

COURSE ACT-MEA-102 **CEUs : 3.5**

Biffi Electric Actuators Service Training

Overview

This 5-day course provides information on the ICON 2000 & 3000 portfolio ranging from multi-turn to ¼ turn, the principles of operation, mechanical and electrical components, followed by a hands-on demonstration and practical troubleshooting.

Prerequisites

Personnel involved with the design, commissioning, operations & maintenance of electric actuators & systems.

Topics

- Product overview
- Actuator operation
- Operation by Handwheel
- Local / Remote Control
- Configuration
- Local Operator Interface
- Set-up Menu and Routines
- View Menu and Routines
- A Manager programs
- Maintenance
- Troubleshooting
- Diagnostics Messages
- Differences between ICON 2000 & 3000

COURSE ACT-MEA-103 **CEUs : 2.8**

EIM Electric Actuators Service Training

Overview

This 3-days Fundamental overview of the construction, assembly, hardware, software and configuration of Emerson's Bettis Tec2000 and Tec2 actuators. Students attending this program will demonstrate an ability to identify actuators, hardware, components and assemblies. All students will demonstrate the ability to setup, configure, check and verify operation of various actuator configurations using appropriate hardware or software. This course is for field service technicians, sales engineers, quotation managers, instrumentation and control technicians.

Prerequisites

Students should have a minimum of one year field service experience and a working knowledge of Bettis TEC2 actuators.

Topics

- Identify main mechanical components and understand the function of Emerson's Bettis Tec2 actuators
- Identify main components and understand function of the non-intrusive Tec2 control package.
- Setup and Commissioning
- Identify function and main components of bevel gears and worm gears
- Upgradation of TEC2000 to TEC2 actuator

COURSE ISV-MEA-101 CEUs : 1.4

Gate, Globe, & Check Valve Overview and Maintenance

Overview

This 2-days course discusses on Emerson's extensive manual valve portfolio comprised of gate, globe, check, & knife gate valves. A practical session with hands-on is included in a workshop type environment. This course is for mechanics, engineers and others who wish to understand the basic concepts for GGC valves functionality, principles of operation, selection criteria & best practices for maintenance.

Topics

- Types of valves & application
- Design standards & testing standards
  Packing designs
- Repair & Maintenance

COURSE ISV-MEA-102 CEUs : 1.4

Ball & Butterfly Valve Overview & Maintenance

Overview

This 2-days course discusses on Emerson's extensive ball & butterfly valve lines comprised of floating & trunnion mounted ball valves, swing type & triple-offset butterfly valves. Brands like Vanessa, Fisher, KTM, and Virgo will be discussed along with different types and models manufactured. A practical session with hands-on is included in a workshop type environment.

Prerequisites

Personnel involved with the design, commissioning, operations & maintenance of these mechanical isolation equipment.

Topics

- Product overview
- Principle of operation
- Servicing, repair & Maintenance

COURSE ISV-MEA-103 CEUs : 1.4

Fundamentals of Vanessa TOV Valves Product & Maintenance

Overview

This course is for technicians, engineers, and others responsible for installing, calibrating and basic troubleshooting Vanessa TOV valves. This 2-days course provides the necessary skills to:

- Install and maintenance of Vanessa TOV valves
- Product details of Vanessa and details of TOV
- Maintenance details with spare parts details

Topics

- Vanessa TOV Terminology
- Triple offset details
- Vanessa Model 30000
- Product features
- Key features
- Value proposition
- Valve maintenance
- Vanessa testing procedure

COURSE ISV-MEA-104 CEUs : 1.4

Fundamentals of AEV Valves Product and Maintenance

Overview

This course is for technicians, engineers, and others responsible for installing, calibrating and basic troubleshooting AEV valves. This 2-days course provides the necessary skills to:

- Install and maintenance of AEV valves.
- Product details of AEV Valves and details of TOV.
- Maintenance details with spare parts details.

Topics

- AEV Valve Terminology
- Value proposition
- Overview
- Capabilities
- Design
- Simplicity
- Double eccentric
- General assemble information
- Valve maintenance
- AEV testing procedure

COURSE VA-MEA-203 **CEUs : 1.0**

Bettis™ Multiport Flow Selector (MPFS) Servicing

Overview

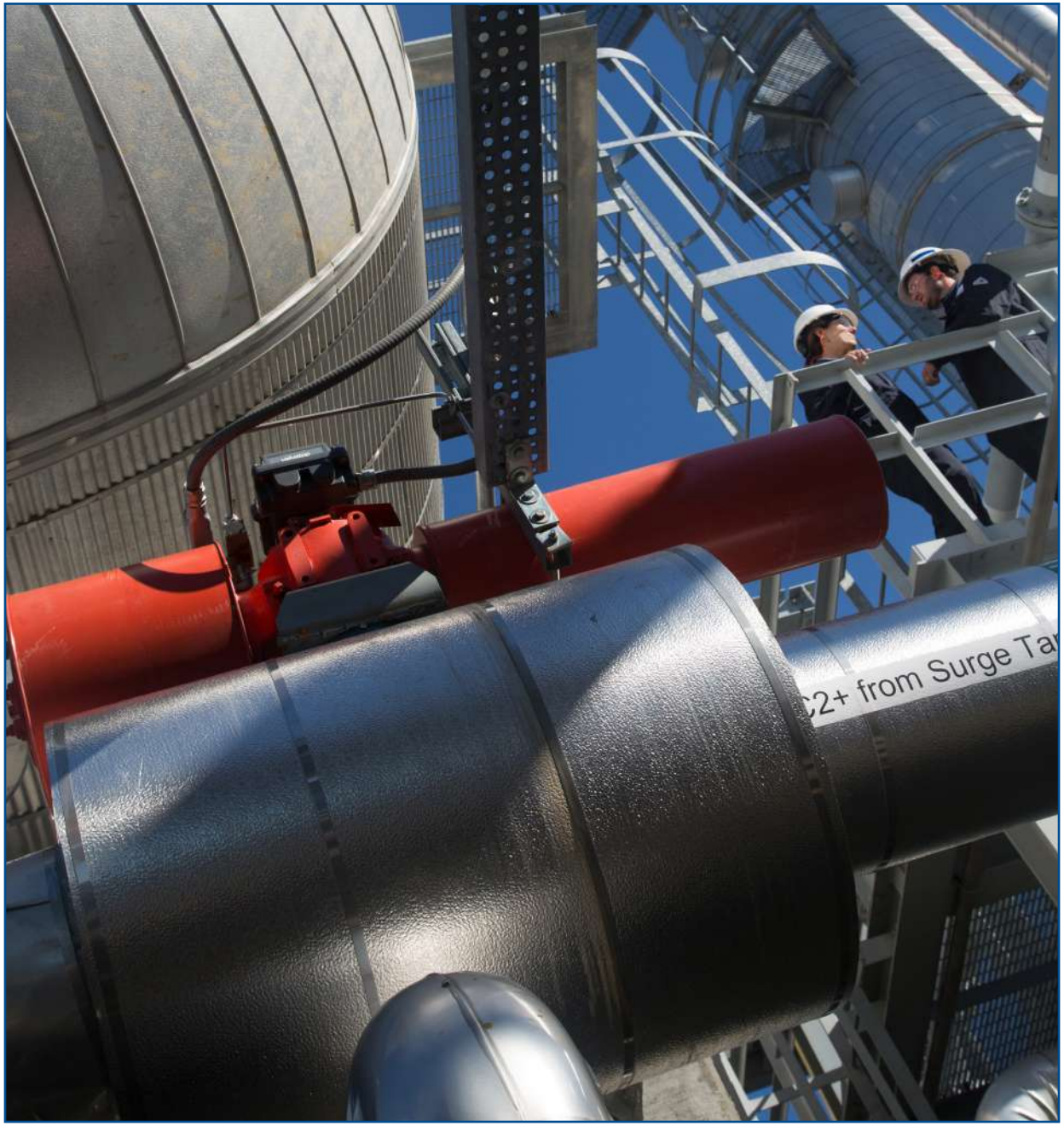
This 1½-day course provides information on the Bettis MPFS, principles of operation and hands-on experience concerning the installation, operation and maintenance of the product.

Prerequisites

Involved with the purchase / application / marketing or sales / service of products.

Topics

- MPFS Design Philosophy
- MPFS assembly overview
- Plug seal components overview
- MPFS Disassembly
- MPFS Re-assembly
  - » Bonnet seal change
  - » Plug seal change
- Actuator local mode operation
- Actuator remote mode operation
- Actuator communication with DCS
- Port alignment / calibration
- Home port calibration



MEASUREMENT INSTRUMENTATION

Measurement Solutions Classroom

In these challenging times when the priority for training your staff can be lost compared to other critical requirements on-site we have a flexible solution to fit all your different needs, calendars and budgets. From virtual trainings that allow your engineers to access from site or home to sending them to attend the customized training courses in our state-of-the-art training facility be assured that we have you covered.

KEY FEATURES

- State-of-the-art audio / visual technology with fixed mobile cameras & microphones for all virtual training requirements
- Demos to cover all training needs across our entire product portfolio
- Analyzer training center with live gases for both face-to-face and virtual trainings
- Mobile Training skid with full Control System, Flow Loops, Instrumentation and Tank Controls

COURSES OFFERINGS AVAILABLE

- IACET compliant Emerson Standard Courses
- Courses that fall under Fundamentals of Instrumentation, Analytical Instrumentation, Pressure, Temperature, Level Measurement, Flow Measurement, Density Measurement & Rosemount Measurement
- Competency Development Programs

OPPORTUNITIES:

- Flexible to your needs, timescale and budgets
- Globally certified expert instructors available to conduct trainings
- Customize training by job function

Emerson's objectives are to help oil and gas operators **increase oil and gas recovery from their reservoirs, reduce uncertainty and make improved field management decisions**. The need for training is more critical than ever to achieve and maintain cost-effective operations. Roxar supports all the delivered instrumentation with a range of highly practical training programs.

COURSE ROX007 **CEUs : 0.7**

Rosemount SAM42 Acoustic Particle Monitor

Overview

The Rosemount SAM42 Acoustic Particle Monitor is a non-intrusive acoustic sand monitoring system that identifies in real-time sand production in any water, oil, gas or multiphase flow lines for onshore and offshore locations. This 1-day training course focuses on teaching the participants what valid and non-valid data are; provides knowledge on how to create reports from data received by the instrument in order to provide input to integrity managers to enable better decision-making. The course is available in two versions: SAM Server and Fieldwatch, depending on the system software that your installation is using to operate the instrumentation.

Topics

Introduction to Sand Metering

- Causes of Sand Production
- Why Do we Need Sand Detection System?
- Roxar Sand and Pig Detection System
- System Enclosure, History; Challenge, Integration with Other Products

Measurement Technology

- How Do We Measure Sand Interface
- Sand Rate Calculation Sand Detector
- Product Optimization

Operations

- Software and General Set-Up;
- System Overview
- Configure Sensor Parameters
- Process Data Interface: Flow Rate Input,
- Velocity Input, Choke Input, Well Test
- Data Interface
- Alarm Settings Interface, Data Logging
- Basic Interpretation: Basic Noise Estimation,
- Sand Production Estimation
- Adv. Interpretation: Velocity in Signal Interpretation
- Flow Regime Consideration

Maintenance

- Detector Installation: Locations on Pipe, Temperature Considerations; Wiring Communication Digital Output
- Calibration: Factory Calibration, Background Noise, Calibration, Automatic Background Noise Curve (ABA), Sand Noise Calibration
- Sand Transport Capability Indicator
- Sand Mass Correction (L)
- Choke Calibration
- Data, K-Factor
- Preventative Maintenance: Visual Inspection and Routine Testing
- Calibration Adjustment: Background Noise Calibration (Zero Calibration)
- Sand Calibration, Hardware Maintenance: Checking Sensor Connections, Re-installing or Replacing the Detector

COURSE ROX001 **CEUs : 2.1**

Roxar Multiphase Meter 1900VI

Overview

The Roxar topside Multiphase meter measures accurately the flow rates of oil, gas and water without separation, mixing or moving parts. Field experience shows long term stability, high accuracy and very good repeatability. The objective of the 3-days Roxar MPFM 1900VI course is to provide the participant with an understanding of the multi phase flow, components and measurement principles of the instrument. The course focuses on providing the participants with detailed understanding of the set-up and configuration; calibration data, reference fluid parameter set-up and operation of the meter. The course will cover interpretation and correlation of MPFM parameters versus influences of process conditions.

Topics

Introduction to Multiphase

- Metering of Oil & Gas Production
- Purpose of the Roxar Multiphase Meter
- Multiphase Flow and Terminology
- Roxar Multiphase Sensors and Electronics

Measurement Technology

- Overview of the Measurement System
- Measurement Principles used in Roxar MPFM 1900VI
- Determination of Flow Rates
- Velocity Measurements: Pressure,
- Temperature & Volume
- Verification of the Measurements which Factors have Vital Importance for Design and Process Calculation

Operations

Overview of Roxar MPFM 1900VI

Operation System

- Service Console Software Installation and Main Screen Presentations
- Communication Set-Up
- Calibration and Reference Fluid Parameter Set-Up
- Purpose of the Service Console Program (SCP)
- Interpretation of the SCP screen Diagnostics
- SCP Screen Alarm Indication, Configuration of the Multiphase Meter
- Practical Information on How to Access and Save Parameter Files;
- Practical Information on How to Log and Retrieve Data; Well Test Options

Maintenance

- Test Equipment and Recommended Spare Parts
- Main Checks and Intervals
- Radiological survey (Topside)
- Reference Fluid Density Parameter Set-Up
- Reference Permittivity and Conductivity
- Temperature, Pressure and Differential
- Pressure Function Check
- Capacitance Unit Function Check
- Inductive Unit Function Check
- Densitometer Unit Function Check

COURSE ROX016 **CEUs : 1.4**

Roxar 2600 Multiphase Flow Meter

Overview

The Roxar Zector technology provides accurate and real-time characterization of flow patterns. The voxel-based signal processing and electrode geometry provides information, including multiple flow velocity data and near wall measurements. The objective of the Roxar MPFM2600 2-days course is to provide the participant with an understanding of the multiphase flow, components and measurement principles of the instrument. The course focuses on providing the participants with detailed understanding of the set up and configuration; calibration data, reference fluid parameter set up and operation of the meter. The course will cover interpretation and correlation of MPFM parameters versus influences of process conditions. Understanding the data is the key in order to make the right decisions for reservoir management.

Topics

Introduction to Multiphase Metering

- Single Phase Metering / Multiphase Metering
- Flow Regimes
- Emerson's Experience in Multiphase Metering
- Roxar MPFM2600
- Mechanical Design

Mechanical Specifications

- Installation and Commissioning Instructions
- Measurement Technology
- Overview of the Measurement System
- The Principle of Operation (Phase Fraction Measurement, the Gamma Densitometer, Velocity Measurement, PVT Tables, Phase Slip, Static Properties)

Software Operations

- Overview of Roxar MPFM Operation System
- Installation and Start Up of the Service Console
- Software Operations: Practical Information on How to Access and Save Parameter Files, Logging and Retrieving data, Well Test Options

Maintenance

- Overview of the Mechanical System
- Maintenance
- Gamma System
- Electrical System
- Calibration
- Replacement of Parts

PVT

- What is PVTx
- Fluid Analysis: Sampling, Compositional Data
- Tempest PVTx
- Import Tables
- Parameter Save and Download; Diagnostics;
- Troubleshooting

COURSE ROX003 **CEUs : 1.4**

Roxar Subsea Multiphase Meter

Overview

The Roxar subsea Multiphase meter provides flow rates for oil, gas and water; vital information for managing reservoirs and processes. The objective of the Roxar SMPFM 2-days course is to provide the participant with an understanding of the multiphase flow, components and measurement principles of the instrument. The objective of the Roxar Subsea Multiphase Meter course is to provide the participant with an understanding of the multiphase flow, components and measurement principles of the instrument. The course focuses on providing the participants with detailed understanding of the set up and configuration; calibration data, reference fluid parameter set up and operation of the meter. The course will cover interpretation and correlation of SMPFM parameters versus influences of process conditions. Understanding the data is the key to make the right decisions for reservoir management.

Topics

Introduction to Multiphase Metering

- Single Phase Metering / Multiphase Metering
- Flow Regimes
- Emerson's Experience in Multiphase Metering
- Roxar SMPFM
- Well Testing, Monitoring and Allocation

Mechanical Specifications

- Roxar SMPFM Components
- Versions of the Meter

Measurement Technology

- Overview of the Measurement System
- The Principle of Operation (Phase Fraction Measurement, the Gamma Densitometer, Velocity Measurement, PVT Tables, Phase Slip,Static Properties)

Software Operations

- Overview of Roxar SMPFM operation system
- Installation and Start-Up of the Service Console
- Software Operations: Practical Information on How to Access and Save Parameter Files, Logging and Retrieving Data, Well Test Options
- Well Test
- Creating Diagnostic Files
- Setting Up Fluid Parameters

Maintenance

- Gamma System
- Electrical System
- Calibration
- Software Updates
- Sensor Geometry

PVT

- What is PVTx
- Fluid Analysis: Sampling, Compositional Data
- Tempest PVTx
- Import Tables

COURSE ROX006 **CEUs : 0.7**

Roxar Watercut Meter

Overview

The Roxar Watercut meter measures water in oil (0% to 100%) and is used in process control on test separators, fiscal metering, on- and offloading, export metering, desalting in refineries, two phase flow metering. The Roxar Watercut meter uses a unique and patented microwave resonance technology to measure the permittivity of an oil / water mixture with an extremely high level of accuracy and sensitivity.

The aim of this 1-day course is to enable participants to take full advantage of the meter in real applications. Upon completion of the course participants should be able to efficiently run the instrument on their own, including delivering on-site quality reliable data, do normal routine maintenance, fault finding and troubleshooting.

Topics

Introduction to Water Cut Metering and Technology

- Why Measure Water Cut?
- Water Cut Metering Challenges
- Water Cut Metering Requirements
- Technology for Water Cut Measurement

Operations

- Connecting to the Meter
- Software Operations: Entering the Meter, Configuration Measurement
- In-line Calibration of the Meter
- Measurement Uncertainty
- Practical Exercises on Meter Electronics

Measurement Technology

- How Do We Measure Water Cut Installation
- Microwave Signal Path Entrapment of Microwaves in a Pipe
- Microwave Resonance
- Permittivity of Oil and Water
- Water Continuous and Oil Continuous Phase
- The Tables of Water Cut Made from the First Meter
- The Production of the Meters to Fit the Model of the First Meter
- The Production Sequence in a Meter Measurement Uncertainty and Initial Explanation

Maintenance

- Overview of Recommended Maintenance
- Turning Diagnostics and Logging of Hyper Terminal
- Taking a 50dB Plot of Microwave Electronics
- Common Error Messages
- Sending Diagnostic Data to Roxar for Analysis and Filing
- Download New Code for a Meter
- Erasing Battery Backed RAM in a Meter
- Troubleshooting the Temperature Transmitter Practical Exercises

COURSE ROX004 **CEUs : 0.7**

Roxar Wetgas Meter

Overview

The Roxar Wetgas Meter is a unique instrument allowing accurate measurement of hydrocarbon flow rates and water production, with a very compact mechanical solution. The aim of this 1-day training is to provide the participants with in-depth knowledge of instrument operation, which enables participants to take full advantage of the meter in real applications. Course participants will be taught the intricacies of the meter and measurement technology, understanding of the data and the measurement principles will allow better decision making when it comes to reservoir management and optimizing the production process.

Topics

Introduction to Wetgas

- Introduction
- Wet Gas
- Why Measure Water?
- Multiphase Flow
- Flow Conditions
- Ranges and Specifications
- Installation Examples

Mechanical Specifications

- Material Overview
- Design Standards
- WGM Components
- Cathodic Protection and HISC
- Insulation and Coating
- Testing

Measurement Technology

- Overview of the Measurement System
- The Principle of Operation
- Direct Measurement and Required Inputs
- Fraction Calculations
- Formation Water Detection
- Calculation Modes
- Redundancy

Operations and Maintenance

- Pre-Commissioning Phases
- Commissioning and Start Up
- Communication
- Roxar WGM Console
- Meter Operation
- Alarms and Warnings
- Calibration (Describe All Alternatives)
- Maintenance

COURSE ROX005 **CEUs : 0.7**

Roxar Subsea Wetgas Meter

Overview

The Roxar Subsea Wetgas meter is a unique instrument allowing accurate measurement of hydrocarbon flow rates and water production with a very compact mechanical solution. The aim of this 1-day training is to provide the participants with in-depth knowledge of instrument operations which enable participants to take full advantage of the meter in real applications. Course participants will be taught the intricacies of the meter and measurement technology, understanding of the data and the measurement principles will allow better decision making when it comes to reservoir management and optimizing the production process.

Topics

Introduction to Wetgas

- Introduction
- Wet Gas
- Why Measure Water?
- Multiphase Flow
- Flow Conditions
- Ranges and Specifications
- Installation Examples

Mechanical Specifications

- Material Overview
- Design Standards
- SWGM Components
- Cathodic Protection and HISC
- Insulation and Coating
- Testing

Measurement Technology

- Overview of the Measurement System
- The Principle of Operation
- Direct Measurement and Required Inputs
- Fraction Calculations
- Formation Water Detection
- Calculation Modes
- Redundancy

Operations and Maintenance

- Pre-commissioning Phases
- Commissioning and Start Up
- Communication
- Roxar SWGM Console
- Meter Operation
- Alarms and Warnings
- Calibration (Describe All Alternatives)
- Maintenance

COURSE D4520 **CEUs: 2.1**

Hydrocarbon Liquid Flow Measurement Systems Operation and Maintenance

Overview
This 3-days course provides students with a detailed understanding of the principles of measurement for Hydrocarbon Liquids. Consideration of the correct Primary measuring device, its installation, operation, and secondary instrumentation requirements will be explained. The instructor will reference applicable standards, used for design, and to optimize system performance. This includes system calibrations, meter-proving practices and maintenance. Full supporting literature will be made available to students.

Prerequisites
A basic knowledge of flow measurement is required.

Topics
- Background to Liquid Flow Measurement
- Commercial and Legal Requirements
- Liquid Flow Measurement Calculations
- Principles of Different Industry Standards Liquid Flow Measurement Techniques
- Measurement Techniques
- Secondary instrumentation, including Liquid Samplers
- Applicable International Flow Measurement Standards
- Meter Operation and Calibration
- Maintenance Procedures & Common Fault Troubleshooting
- Industry Best Practices
- Reporting and Book Keeping
- Introduction to Measurement Uncertainty

COURSE D4510 **CEUs: 1.4**

Hydrocarbon Gas Flow Measurement Systems Operation and Maintenance

Overview
This 2-days course provides students with a detailed understanding of the principles of measurement for Hydrocarbon Gases. Consideration of the correct Primary measuring device, its installation, operation and secondary instrumentation requirements will be explained. The instructor will reference applicable standards, used to design the system to optimize performance. This includes system calibrations and device maintenance. Full supporting literature will be made available to students.

Prerequisites
A basic knowledge of flow measurement is required.

Topics
- Background to Gas Flow Measurement
- Gas Flow Measurement Calculations
- Applicable International Flow Measurement Standards
- Commercial and Legal Requirements
- Principles of Different Industry Standards Gas Flow Measurement Techniques
- Meter Operation, Calibration and Metering Operations
- Maintenance Procedures & Common Fault Troubleshooting
- Industry Best Practices
- Reporting and Book Keeping
- Introduction to Measurement Uncertainty

COURSE D4230 / D4280 **CEUs: 1.4**

Rosemount Gas / Liquid Ultrasonic Meters Operation & Maintenance

Overview
This 2-days course prepares students to install, operate and maintain multipath ultrasonic flow meters. In addition to classroom instruction, the training course includes hands-on experience using the flow meter, simulator and diagnostic software.

Topics
- Basics of Sound Waves
- Ultrasonic Flow Meters Principles of Operation, Advantages Versus Other Metering Technologies
- Performance Characteristics of Transit Time Ultrasonic Flow meters
- System Components and Next-Generation Electronics Platform, including the Central Processing Unit (CPU) Board
- Software Interface, Meter Configuration and Diagnostics through Meterlink
- Volumetric and Mass Ultrasonic Gas Flow Measurement
- Meter Installation Considerations and Best Practices
- Inform the instructor if working on Liquid Meter

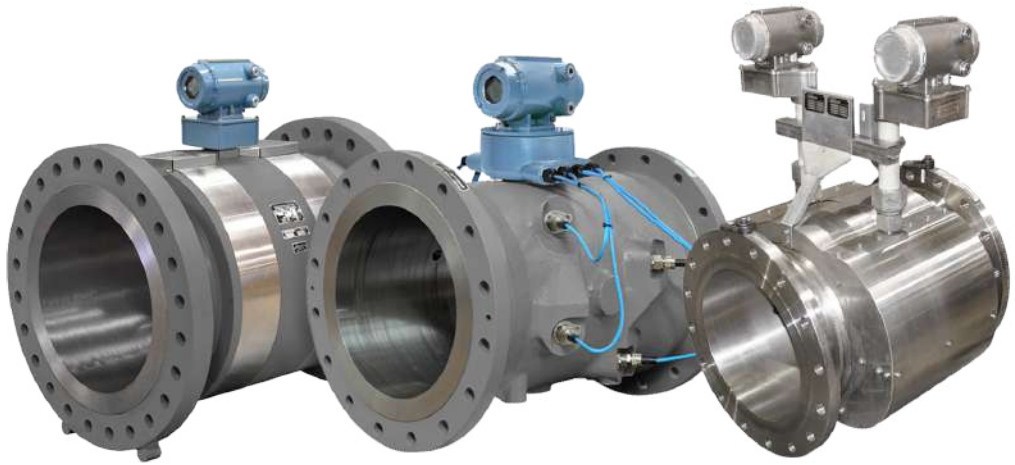
COURSE D4270 **CEUs: 1.4**

Emerson Compact Prover Operation & Maintenance

Overview
This 2-days course covers the operation, installation and maintenance of the Compact Prover.

Prerequisites
Basic knowledge of flow measurement.

Topics
- Theory of Operation: Double Chronometry and Specifications
- Overview of the Parts Which Make up the Compact Prover such as Actuator Assembly,
- Installation: Prover and Meter Location
- Overview of Calibration and Waterdraw Data Sheet
- Overview of Prover Electronics:
- Programming, Input and data Modes Using Software / Local Display, Circuit Module Description and Diagnostics
- Proving Operations: Direct Proving and Master Meter Proving
- Prover Maintenance



COURSE D4260 / D4262 **CEUs: 1.4**

Operation and Maintenance of S600 / S600+ Flow Computers

Overview
This 2-days course provides students with an appreciation of the operation, design, capabilities and configuration of the S600 / S600+ flow computer. This hands-on course deals with file transfer and machine recovery as part of the maintenance scope. The instructor will make use of the latest configuration software. Full supporting literature will be made available to all students.

Prerequisites
Basic knowledge of flow measurement.

Topics
- Introduction to the S600 / S600+
- Board Removal and Layout
- Keypad Access and Security
- Menu Navigation
- Data / Mode Changing
- Alarm Handling and Configuration Configuring and Generating Reports Application Specific Functions
- Cold / Warm Starting Modes
- File Back-Up and Download
- Using the configuration Software

COURSE D4530 **CEUs: 1.4**

Understanding Metering Systems: Applications, Operations and Maintenance

Overview
This 2-days course is an introduction to high accuracy fluid flow measurement systems. The instructor will explain the practical application of gas and liquid flow meters and secondary instrumentation as well as the liquid sampling and gas analysis techniques for measuring product quality. Good practice for System operation and maintenance will also be discussed. Supporting literature will be supplied to students.

Prerequisites
A background in process control or process instrumentation is required.

Topics
- Background to High Accuracy Fluid Flow Measurement
- Custody Transfer, Fiscal and Allocation Metering
- Commercial Agreements and Legal Requirements
- Flow Measurement Methods
- Qualitative Measurement
- Reference Standards Employed
- Flow and Energy calculations
- System Maintenance
- Good Metering Practices

COURSE D4540 **CEUs: 1.4**

Emerson Metering Suite Measurement and Control System Introduction to Operation and Maintenance

Overview
This 2-days generic course provides students with an operational introduction to the Emerson Metering Suite Measurement & Control System. The instructor will also explain the features and benefits of the control options available within the System. Students will receive supporting literature.

Prerequisites
A background in flow measurement is required.

Topics
- Introduction to the System Architecture
- Operator Interface Graphics and Controls
- Access and Security
- Communication and Interface to System Field Components Reporting and Alarm Functions
- Simple Diagnostics and Troubleshooting

*More detailed training for a specific project application is also available and will be quoted on request.

COURSE 2380 **CEUs: 1.4**

Micro Motion Coriolis Product

Overview
This 2-days class is modeled after the 2352 factory course. It consists of a blend of lectures and extensive hands-on exercises that cover the installation, configuration and calibration of the Micro Motion metering system. Students will learn the Series 1000/2000 transmitters using either ProLink® III, AMS Device Manager, HC475 or L.O.I. Students will perform a master reset, configure the Series 1000/2000, perform a flow calibration and solve troubleshooting problems. Based on student need, we will cover one or all of the following topics: RFT9739, 9739MVD transmitter, T-Series, R-Series, or Series 3000 platform. On-site classes can be customized to cover the customer's installed base, preferred configuration tools and application questions. This course also includes an introduction to Micro Motion's new 5700 transmitter.

Prerequisites
Basic understanding of the fundamentals of flow measurement, electricity, analog and frequency signal processing are assumed.

Topics
- Explain the Fundamentals for how a Micro Motion Coriolis Meter Works and the Function of the Key Components
- Learn the Installation Best Practices for Orienting, Mounting and Wiring the Sensor and Transmitter
- Configure the Metering System to Measure Flow, Density and Temperature for Various Applications
- Learn a Step by Step Process to Perform
- Basic Troubleshooting of the Most Common Meter and Process Issues

Audience
This class is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Micro Motion flow and density meter. Typical job functions include, maintenance technicians, instrument technicians and instrumentation engineers.

COURSE 2358 **CEUs: 0.7**

Micro Motion Coriolis Product Intermediate

Overview
This one-day course consists of a blend of lectures and hands-on exercises that cover the installation, configuration, calibration checks and troubleshooting of Micro Motion sensors with the Series 1000/2000 transmitters and peripherals. This course includes hands-on exercises. Courses held at customer specified sites can be customized to address specific transmitters and configuration tools. Public registration classes cover a broader range of equipment based on the needs of the attendees. After completing this training, students will also get unlimited access to the Micro Motion's Online Training (e1010, e1011, e1012, e1013, e1014, e1015, & e1016) for a year. This online training cost $600/license per year if purchased separately.

Prerequisites
None required. However, basic understanding of the fundamentals of flow measurement, electricity, analog & frequency signal processing are assumed.

Topics
- Explain the Fundamentals for how a Micro Motion Coriolis Meter Works and the Function of the Key Components
- Be able to apply the installation best practices for orienting, mounting and wiring the sensor and transmitter.
- Configure the Metering System to Measure Available Process Variables from the Device for Their Application
- Learn a Step by Step Process to Perform Basic Troubleshooting of the Most Common Meter and Process Issues

Audience
This course is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Micro Motion Coriolis flow and density meter. Typical job functions include; maintenance technicians, instrument technicians and instrumentation engineers.

COURSE 5710 **CEUs: 0.7**

Micro Motion Coriolis Configurable Transmitters Intermediate

Overview
This one-day course consists of a blend of lectures and hands-on exercises that cover the installation, configuration, calibration checks and troubleshooting of Micro Motion sensors with the Series 5700 transmitters and peripherals. This course includes hands-on exercises. Courses held at customer specified sites can be customized to address specific transmitters and configuration tools. Public registration classes cover a broader range of equipment based on the needs of the attendees.

Prerequisites
None required. However, a basic understanding of the fundamentals of flow measurement, electricity, analog & frequency signal processing are assumed.

Objectives
After attending this course the student will be able to do the following:
- Be able to explain the principle of operation for how a Micro Motion Coriolis meter works and the function of the key components.
- Be able to apply the installation best practices for orienting, mounting and wiring the sensor and transmitter.
- Be able to configure the metering system to measure flow, density and temperature for their application.
- Be able to apply a step by step process to perform basic troubleshooting of the most common meter and process issues.

Audience
This one-day course is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Micro Motion Coriolis flow and density meter. Typical job functions include: maintenance technicians, instrument technicians and instrumentation engineers.

COURSE 2340 **CEUs: 0.7**

Rosemount 8700 Series Magnetic Flowmeter

This course is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Rosemount 8700 Series Magnetic flowmeter. Typical job functions include: maintenance technicians, instrument technicians and instrumentation engineers.

Overview

This 1-day course consists of a blend of lectures and hands-on exercises that cover how to install, configure and maintain the Rosemount 8700 Series Magnetic Flowmeter Systems composed of the Model 8712 and 8732 transmitters and the 8705 Flanged and 8711 Wafer Sensors. The students will learn the operation and capabilities of Local Operator Interface (LOI), 475 Field Communicator, and / or AMS Device Manager and how to use these tools to perform configuration. Common issues encountered and troubleshooting techniques will also be covered.

Prerequisites

Knowledge of basic flow fundamentals and instrumentation.

Topics

- Explain the Difference and Capabilities of the Rosemount 8700 Series Magnetic Flowmeters
- Identify Transmitter and Sensor Parts and Explain Functionality
- Explain Faraday's Law and the Principles of Operation of Magnetic Flowmeter System
- Configure and Test Transmitters Using the LOI, Field Communicator or AMS Device Manager or PROLINK III
- Properly Install / Troubleshoot the Rosemount Magnetic Flowmeter System

Customized Training at a customer's plant is a **convenient, cost-effective means of training four to ten technicians**. Also, offering special technical training tools and materials for self-study.

COURSE 2341 **CEUs: 0.7**

Rosemount 8800 Series Vortex Flowmeter

Overview
This one-day course consists of a blend of lectures and hands-on exercises that cover how to install, configure and maintain the Rosemount 8800 Series Smart Vortex flowmeter systems. Students will learn the operation and Local Operator Interface as well as how to use these tools to perform configuration. Common issues encountered and troubleshooting techniques will also be covered. This course includes hands-on exercises within the Inter Active Plant Environment training facility. Customer exclusive classes can be customized to address specific transmitter and configuration tools specific to that customer

Prerequisites
None required. However, a basic understanding of the fundamentals of flow measurement, electricity, analog & frequency signal processing are assumed.

Objectives
After attending this course the student will be able to do the following:
- Explain the differences and capabilities of the Rosemount 8800 Series Vortex flowmeters
- Explain the von Karman Effect and the principles of operation for vortex flowmeters
- Identify vortex parts and explain functionality
- Configure and test transmitters
- Properly install and troubleshoot the Rosemount 8800 Series Vortex flowmeter system
- Apply a step by step process to perform basic troubleshooting of the most common process issues
- Experience hands on simulated plant environment with operating Vortex flowmeter system

Audience
This one-day course is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Rosemount 8800 Series Smart Vortex flowmeter. Typical job functions include: maintenance technicians, instrument technicians and instrumentation engineers.

COURSE 5708 **CEUs: 1.4**

Micro Motion Density and Viscosity Product Training

Overview
This 2-day course consists of a blend of lectures and hands-on exercises that cover the installation, configuration, calibration checks and troubleshooting of Micro Motion transmitters and peripherals. Courses held at customer specified sites can be customized to address specific transmitter and configuration tools. Public registration classes cover a broad range of equipment based on the needs of the attendees.

Topics
After attending this course the student will be able to do the following:

- Explain the principle of operation for how a Micro Motion density & Viscosity meter works and the function of the key components.
- Apply the installation best practices for orienting, mounting and wiring the sensor and transmitter.
- Configure the metering system to measure flow, density and temperature for their application.
- Apply a step-by-step process to perform basic troubleshooting of the most common meter and process issues.
- Please note: No education demos are available for this course. If hands-on exercises are required, they will be conducted using onsite equipment.

Note
No education demos are available for this course. If hands-on exercises are required, they will be conducted using onsite equipment.

COURSE 5714 **CEUs: 0.7**

Micro Motion Compact Density Meter Intermediate

Overview
This one-day course consists of a blend of lectures and hands-on exercises that cover the installation, configuration, calibration checks and troubleshooting of a Micro Motion Compact Density Meter. Courses held at Emerson office or customer specified sites can be customized to address specific configuration tools.

Topics
After attending this course the student will be able to do the following:

- Explain the principle of operation for how a Micro Motion Compact Density meter works and the function of the key components.
- Apply the installation best practices for orienting, mounting and wiring the sensor and transmitter.
- Configure the metering system to measure density and temperature for their application.
- Apply a step by step process to perform basic troubleshooting of the most common meter and process issues.

Audience
This one-day course is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Micro Motion density meter. Typical job functions include maintenance technicians, instrument technicians and instrumentation engineers.

Note
No education demos are available for this course. If hands-on exercises are required, they will be conducted using onsite equipment.

COURSE 2305 **CEUs: 0.7**

Rosemount 3051 Pressure Transmitter

Overview
This course is designed for those individuals responsible for the installation and maintenance of the Rosemount Model 3051 Smart Pressure Transmitter. This 1-day course lecture and labs to teach the student how to install, configure, calibrate, and maintain the Rosemount Model 3051 Smart Pressure Transmitter. The Student will also learn the operation of the Model Field Communicator, Students will:

- Explain the differences between Smart & Analog Transmitters
- Identify 3051 parts and functionality
- Explain the principles of operation of the 3051
- Configure, calibrate and test 3051 Smart Pressure Transmitters using the Field Communicator or AMS
- Properly install / troubleshoot the 3051 Smart Transmitter

Prerequisites
Knowledge of basic pressure fundamentals and pressure instrumentation

Topics

- Smart and Analog Transmitters
- 3051 Overview and Principles of Operation
- Test Equipment Selection
- Bench Testing the 3051 Smart Transmitter Field Communicator Operation
- Digital Trims / Calibration
- Installation and Start-up
- Troubleshooting and Maintenance

COURSE 6708 **CEUs: 1.4**

Micro Motion - Density and Viscosity Product Training

Overview
This 2-day course consists of a blend of lectures and hands-on exercises that cover the installation, configuration, calibration checks and troubleshooting of Micro Motion transmitters and peripherals. Courses held at customer specified sites can be customized to address specific transmitter and configuration tools. Public registration classes cover a broad range of equipment based on the needs of the attendees. After attending this course the student will be able to do the following:

- Explain the principle of operation for how a Micro Motion density & Viscosity meter works and the function of the key components.
- Apply the installation best practices for orienting, mounting and wiring the sensor and transmitter.
- Configure the metering system to measure flow, density and temperature for their application.
- Apply a step-by-step process to perform basic troubleshooting of the most common meter and process issues.

Note
No education demos are available for this course. If hands-on exercises are required, they will be conducted using onsite equipment.

COURSE 6708 **CEUs: 0.7**

Micro Motion - Density and Viscosity Product Training

Overview
This one-day course consists of a blend of lectures and hands-on exercises that cover the installation, configuration, calibration checks and troubleshooting of a Micro Motion Compact Density Meter. Courses held at Emerson office or customer specified sites can be customized to address specific configuration tools. After attending this course the student will be able to do the following:

- Explain the principle of operation for how a Micro Motion Compact Density meter works and the function of the key components.
- Apply the installation best practices for orienting, mounting and wiring the sensor and transmitter.
- Configure the metering system to measure density and temperature for their application.
- Apply a step by step process to perform basic troubleshooting of the most common meter and process issues.

Audience
This one-day course is intended for anyone that is involved with properly installing, wiring, configuring and troubleshooting a Micro Motion density meter. Typical job functions include maintenance technicians, instrument technicians and instrumentation engineers.

Note:
No education demos are available for this course. If hands-on exercises are required, they will be conducted using onsite equipment.

COURSE 2307 **CEUs: 0.7**

Rosemount 3051S Fieldbus Pressure Transmitter

Overview

This course is designed for those individuals responsible for the installation and maintenance of the Rosemount Model 3051 Fieldbus Pressure Transmitters. This 1-day course uses lectures and labs to maximize the hands-on experience and teach the student how to install and maintain the Rosemount Model 3051 Fieldbus Pressure Transmitter. The Student will also learn the operation of the Field Communicator. Students who complete this course will able to :
Identify 3051 parts and functionality

- Explain the principles of operation of the 3051
- Design and build a Fieldbus segment
- Configure test, and calibrate the 3051
- Fieldbus Pressure Transmitter using the field Communicator
- Properly install and troubleshoot the 3051 Fieldbus Transmitter

Prerequisites

Knowledge of basic pressure fundamentals and pressure instrumentation.

Topics

- 3051 Overview and Principles of Operation
- FOUNDATION™ Fieldbus Overview
- Fieldbus Wiring / Segment
- Design / Function Blocks
- Test Equipment Selection
- Bench Testing 3051 Fieldbus Transmitter
- Field Communicator Operation
- Digital Trims / Calibration
- Installation and Start-up
- Troubleshooting and Maintenance

COURSE 2308 **CEUs: 0.7**

Rosemount 3051S Pressure Transmitter

Overview

This course is designed for those individuals responsible for the installation, configuration, calibration, troubleshooting and maintenance of the Rosemount Model 3051S Smart Pressure Transmitter. This 1-day course uses lectures and labs to maximize the hands-on experience and teach the student how to install, configure, calibrate, troubleshoot and maintain the Rosemount Model 3051S Smart Pressure Transmitter. The student will also learn the operation if the Model Field Communicator. Students who complete this course will be able to:

- Identify 30501S parts and functionality explain the principle of operation of the 3051S
- Configure and test the 3051S Smart
- Pressure Transmitters using the Field
- Communicator or AMS
- Properly install, configure and test the 3051S Smart Transmitter

Prerequisites

Knowledge of basic pressure fundamentals and pressure instrumentation

Topics

- 3051S Overview / Principles of Operation
- 3051S Installation & Options
- Test Equipment Selection
- Configure & Test the 3051S Advance Features:
  - » Alarm & Saturation Levels,
  - » Alarm Direction, Write Protection,
  - » Process Alerts, Scaled Variable
- Digital Trims / Calibration
- Troubleshooting and Maintenance

COURSE 2309 **CEUs: 0.7**

Rosemount DP Level & Electronic Remote Sensor (ERS) System

Description
This 1-day course uses lecture and labs to maximize he hands on experience and teach the student how to install, configure, calibrate, maintain, and troubleshoot DP Level Transmitters and the Rosemount 3051S ERS System.

Prerequisites:
Knowledge of basic Pressure, and DP Level fundamentals & instrumentation.

Topics
- How remote seals work
- Understanding Remote Seals components
- Diaphragm Seals Most Common
- Understanding Capillary Connections
- Understanding the different fill fluids
- Understanding Remote Seal performance
- Remote Seal Performance Calculation using Instrument Toolkit
- Installing / Mounting DP Level Transmitters
- Ranging / Scaling DP Level Transmitters
- ERS Technology
- ERS Overview and Principles of Operation
- ERS / DP Level Installation
- ERS Wiring
- ERS Configuration with AMS Device Manager and the Field Communicator
- ERS Module Assignments
- ERS Scaled Variable
- Bench Testing the ERS System
- ERS Zero Trims and Calibration
- Troubleshooting and Maintenance

Objectives
Students who complete this course will:
- Know the common DP Level Applications
- Understand Remote Seal Components
- Understanding Remote Seal performance
- Know How to perform DP Level Installation and Ranging
- Identify ERS transmitter parts and explain their functionality
- Identify 3051S ERS Hi & Lo Sensors
- Explain the principles of operation of the ERS System
- Configure and test the ERS system use AMS Device Manager & the Field Communicator
- Perform Zero Trims and Calibrate the ERS Sensors
- Properly install & troubleshoot the 3051S ERS System

Audience
This course is designed for those individuals responsible for the installation, configuration, calibration, troubleshooting and maintenance of DP Level Transmitters and the Rosemount 3051S Electronic Remote Sensors (ERS) System.

COURSE 2310 **CEUs: 0.7**

Rosemount 3051S Multi Variable Mass Flow Transmitter

Description
This 1-day course uses lecture and labs to maximize the hands on experience and teach the student how to install, configure, calibrate and maintain the Rosemount Model 3051SMV HART Mass Flow Transmitter.

Prerequisites
Knowledge of basic Pressure, and DP Flow fundamentals and instrumentation.

Topics
- DP Flow Fundamentals
- Overview and Principles of Operation
- Test Equipment Selection
- Temperature Sensor Wiring
- Bench Testing the Smart Transmitters
- 3051SMV Engineering Assistant Software
- Operation of the Field Communicator and AMS Device Manager
- Digital Trims / Calibration
- Installation and Start-Up
- Troubleshooting and Maintenance

Objectives
Students who complete this course will:
- Identify transmitter parts & explain their functionality
- Explain the principles of operation of the transmitter
- Configure and test using the Field Communicator, AMS Device Manager, and the 3051SMV Engineering Assistant software
- Configure the compensated flow parameters using the 3051SMV Engineering Assistant Software properly install & troubleshoot the 3051SMV transmitter

Audience
This course is designed for those individuals responsible for the installation, configuration, calibration and maintenance of the Rosemount 3051S Multi-Variable Transmitter.

Note:
This product is also included in course 2327 and 2329.

COURSE 2321 **CEUs: 0.7**

Rosemount 3144P Temperature Transmitters

Overview

This course is designed for those individuals responsible for the installation and maintenance of the Rosemount Model 3144P Smart Temperature Transmitters. This 1-day course uses lecture and labs to teach the students how to install, configure, calibrate and maintain the Rosemount Model 3144P Smart Temperature Transmitters. The Student will also learn the operation of the field Communicator. Students who complete this course will:

- Identify 3144P parts and explain their functionality
- Explain the principles of operation of the 3144P
- Configure, calibrate and test 3144P Smart Temperature Transmitter using the Field Communicator or AMS
- Properly install and troubleshoot the 3144P Smart Transmitter

Prerequisites

Knowledge of basic temperature fundamentals and temperature instrumentation

Topics

- 3144P Overview and Principles of Operation
- Test Equipment Selection Sensor
- Selection and Wiring
- Bench Testing the 3144P Smart Transmitters
- Field Communicator Operation
- Digital Trims / Calibration
- 3144P Dual Sensor Setup and Configuration
- Installation and Start-up
- Troubleshooting and Maintenance

COURSE 2333 **CEUs: 2.1**

Rosemount Process Measurement Level Products

Overview

This course is intended for technicians, engineers and other plant personnel who need to know installation, calibration, maintenance and troubleshooting of measurement instrumentation. This 3-days course explains how level instruments function and how they are installed and calibrated. It emphasizes installation, proper setup and calibration / verification of level instruments. The course uses lectures and labs to teach the students. Those who complete this class will be able to:

- Correctly install Guided Wave Radar Transmitters
- Correctly install Non-contacting Radar Transmitters
- Properly calibrate Level instruments
- Perform basic troubleshooting

Prerequisites

Some experience in instrument calibration, maintenance , installation and operation would be helpful.

Topics

- DP Level Fundamentals
- Radar Applications
- Radar Instruments
- Radar PC Software
- Field Communicator
- Test Equipment Selection
- Installation
- Configuration
- Calibration / Verification
- Troubleshooting

COURSE 2336 **CEUs: 0.7**

Rosemount 5408 Non-Contacting Radar Level Transmitter

Overview

This course is designed for those individuals responsible for the installation, configuration, calibration and maintenance of the Rosemount Model 5408 HART Radar Level Transmitter. This 1 day course uses lecture and labs to maximize the hands-on experience and teach the student how to install, configure, troubleshoot and maintain the Rosemount Model 5408 Radar Transmitters. Students who complete this course will be able to:

- Explain the principle of operation of the 5408 Radar
- Identify 5408 Radar parts and explain their functionality
- Properly install and wire the 5408 Radar
- Configure and test the 5408 Radar to work in different applications
- Properly troubleshoot the 5408 Radar
- Transmitter and the installation using AMS Device Configurator

Prerequisites

Knowledge of basic level fundamentals and instrumentation

Topics

- 5408 Overview and Principles Operation
- Installation of the 5408 Radar
- Wiring 5408 Radar
- Configuration of 5408 Radar
- Bench testing the 5408 Radar
- Field Communicator Operation
- AMS Device Manager Operation
- AMS Device Configurator
- Troubleshooting and Maintenance
- Tank & Application Troubleshooting and Echo Handling using AMS Device Configurator

Note:

5408 HART Radar Level transmitter is also included in the 3-days Level course # 2333

COURSE 2337 **CEUs: 0.7**

Rosemount 5300 Guided Wave Radar Level Transmitter

Overview

This course is designed for those individuals responsible for the installation, configuration, calibration and maintenance of the Rosemount Model 5300 High Performance Guided Wave Radar (GWR) Series HART Radar Level Transmitter. This 1 day course uses lecture and labs to maximize the hands-on experience and teach the student how to install, configure, troubleshoot and maintain the Rosemount Model 5300 High Performance GWR Transmitter. Students who complete this course will be able to :

- Explain the principles of operation of the 5300 GWR
- Identify 5300 GWR parts and explain their functionality
- Understand the available probe option and when each should be used
- Properly install and wire the 5300 GWR
- Understand how to setup the 5300 GWR in work in application
- Properly troubleshoot the 5300 GWR
- Transmitter and installation using Radar Master Software

Prerequisites

Knowledge of basic level fundamentals and instrumentation

Topics

- 5300 Overview and Principles of Operation
- Installation of the 5300 GWR
- Wiring the 5300 GWR
- Field Communicator Operation
- AMS Software Operation
- Troubleshooting and Maintenance
- Tank & Application Troubleshooting and Echo Handling Using Radar Master Software

COURSE 2326 **CEUs: 2.8**

Rosemount Process Measurement Pressure & Temperature Products

Overview
This 4-day course explains how pressure and temperature transmitters function and how they are installed and calibrated. It emphasizes installation, proper set-up and calibration of Analog and HART Pressure and Temperature Transmitters. The course uses lectures and labs to teach the students.

Prerequisites
Some experience in instrument calibration, maintenance, installation and operation would be helpful.

Topics
- Basic 4-20 mA Loop Setup
- Pressure Sensors
- Temperature Sensors (TC, RTD)
- Analog Transmitters (1151)
- HART Communication
- Field Communicator
- Pressure Transmitters
- Temperature Transmitters
- Using AMS Device Manager to Configure and Calibrate Transmitters
- Installation
- Configuration
- Calibration
- Troubleshooting

Objectives
Those who complete this class will be able to:
- Correctly perform installation and setup procedures
- Properly configure transmitters
- Properly calibrate transmitters
- Perform basic troubleshooting

Audience
This course is intended for technicians, engineers and other plant personnel who need to know installation, calibration, maintenance and troubleshooting of measurement instrumentation.

COURSE 2327 **CEUs: 1.4**

Rosemount Process Measurement DP Flow Products

Overview
This 2-day course explains how DP flow instruments function and how they are installed and calibrated. It emphasizes installation, proper setup and calibration/verification of DP flow instruments. The course uses lectures and labs to teach the students.

Prerequisites
Some experience in instrument calibration/ verification, maintenance, installation and operation would be helpful.

Topics
- Basic DP Flow Fundamentals
- DP Flow Sizing Calculations
- Multi-variable Flow Transmitters
- AMS Device Manager with Engineering Assistant Snap-ON (3095)
- Engineering Assistant for 3051SMV
- Field Communicator
- Test Equipment Selection
- Installation
- Configuration
- Calibration /Verification
- Troubleshooting DP Flow Installations

Objectives
Those who complete this class will be able to:
- Correctly install configure, calibrate multi-variable DP Flow Transmitters
- Perform DP Flow troubleshooting

Audience
This course is intended for technicians, engineers and other plant personnel who need to know installation, calibration, verification, maintenance and troubleshooting of DP flow measurement instrumentation.

COURSE 2370 **CEUs: 2.1**

Rosemount Measurement Instruments

Overview
This 3-day factory class covers the integration of FOUNDATION™ compliant measurement devices using the Field Communicator, Modem , AMS Device Manager, and other hosts.

Prerequisites
Experience in instrument calibration, maintenance, installation, and operation would be helpful.

Topics
- FOUNDATION™ Overview
- Wiring/Segment Design/Function Blocks
- Field Communicator Operation
- AMS Device Manager Operation
- Theory of Operation, Installation, Configuration, Maintenance, Calibration and Troubleshooting on the following:
  - 3051C Pressure Transmitter
  - 3051S Pressure Transmitter
  - 3144P Temperature Transmitters
  - 848 Temperature Transmitter
  - 5408 and 5300 Radar Level Transmitters
  - 752 Indicator

Objectives
Upon completion of this course students will be able to: install, configure, calibrate, and troubleshoot Rosemount devices which include the 3051C and 3051S Pressure Transmitters, 644, 3144P and 848 Temperature transmitters, 5408 and 5300 Radar Level Transmitters, and 752 Indicator.

Audience
This factory course is for individuals responsible for installing, configuring, calibrating, and troubleshooting FOUNDATION™ measurement devices.

COURSE 2329 **CEUs: 1.4**

Rosemount Pressure, Temperature & Multi-Variable Flow Transmitters

Overview
This 2-day course uses lectures and labs to maximize the hands on experiences and teach the student how to install, configure, calibrate, troubleshoot, and maintain the Rosemount 3051, 3144P, and 3051SMV Transmitters.

Prerequisites
Students should have experience with process instrumentation and measurements.

Topics
- Field Communicator Operation
- 3051 Pressure Transmitter Installation, Configuration, Calibration and Troubleshooting
- 3144P Temperature Transmitter Installation, Configuration, Calibration and Troubleshooting
- 3051SMV Multi-Variable DP Flow Transmitter Installation, Configuration, Calibration and Troubleshooting

Note:
Students must attend both days. Reference course, 2305, 2321 and 2308MV for further details.

COURSE 2375 **CEUs: 1.4**

Rosemount Wireless Self Organizing Network with Host Integration

Overview

This 2-day course explains how Self Organizing Wireless Networks function and how they are installed, setup, configured and integrated. It emphasizes planning, proper installation and startup, configuration, maintenance, and integration. The course uses lectures and labs to maximize the hands on experience and teach the students.

Prerequisites

Some experience in Wireless Networks and Host integration would be helpful.

Topics

- How Self Organizing Networks Function
- Self Organizing Networks Best Practices
- Network Components
- Gateway Installation and Setup
- Network Parameters
- Wireless Transmitters Installation, Configuration, Maintenance and Calibration
- THUM Installation, Wiring and Configuration
- Integrating and Operating AMS Device Manager with the 1420 Wireless Gateway
- Operation of AMS Wireless SNAP-ON
- Modbus Serial Integration
- Modbus TCP Integration
- OPC Integration

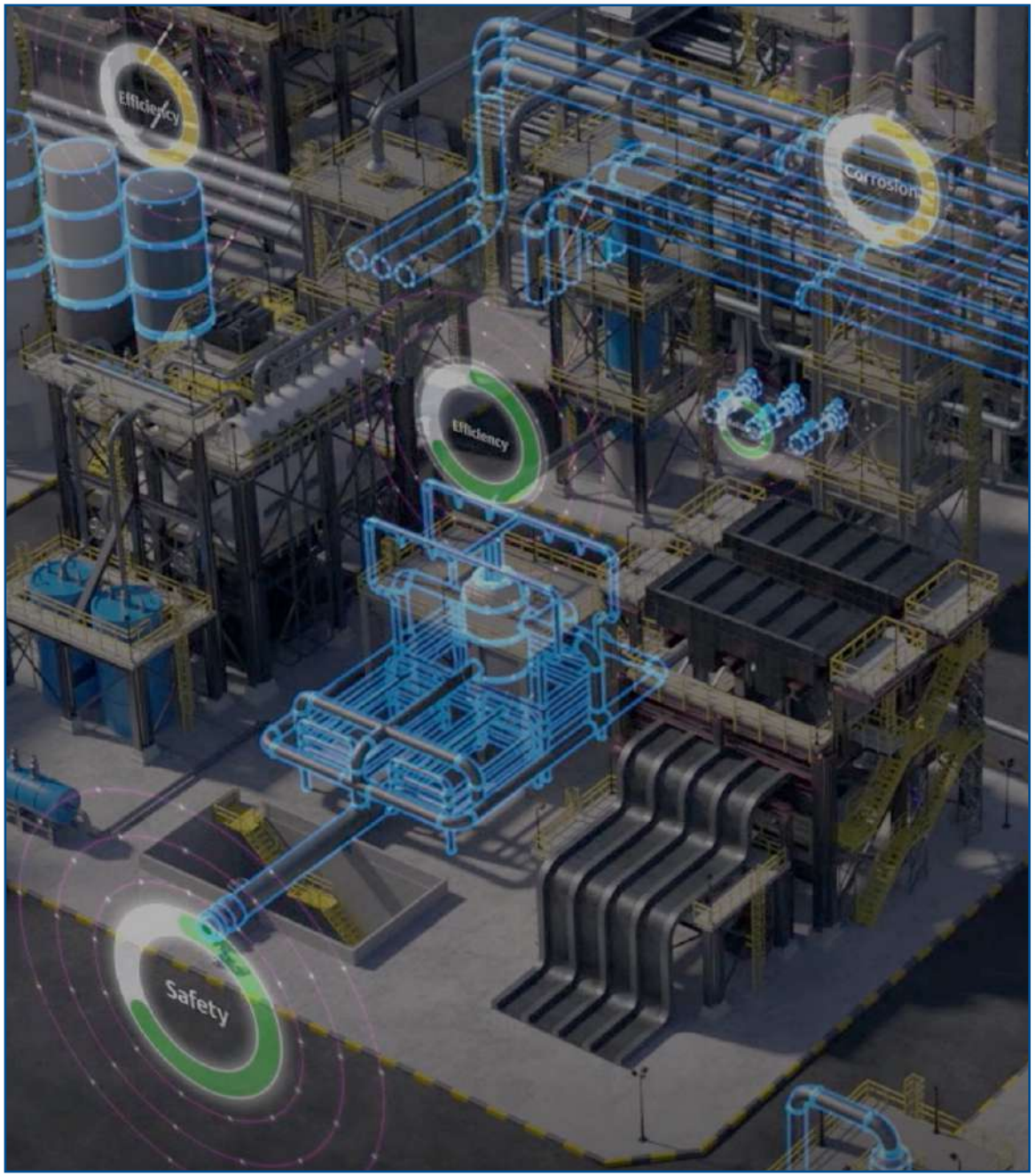
Objectives

Students who complete this course will:

- Correctly install and setup the 1420 & 1410 Wireless Gateway
- Properly install and configure Wireless Transmitters
- Properly integrate Host interfaces to the Wireless Gateway

Audience

- This course is intended for technicians, engineers and other plant personnel who need to know how to design, install, setup, configure, maintain and troubleshoot Wireless Self Organizing Networks and their components.



COURSE 2395 **CEUs: 0.7**

Rosemount 3300 & 5300 Guided Wave Radar Level Transmitters

Overview
This 1-day course uses lecture and labs to maximize the hands on experience and teach the student how to install, configure, troubleshoot and maintain the Rosemount 3300 & 5300 Series HART Radar Level Transmitters.

Prerequisites
Knowledge of basic level and interface fundamentals and instrumentation.

Topics
Students who complete this course will be able to:

- Explain the principles of operation of the 3300 / 5300 GWR
- Identify 3300 / 5300 GWR parts and explain their functionality
- Understand available probe options and when each should be used
- Properly install and wire the 3300 / 5300 GWR
- Configure and test the 3300 / 5300 GWR
- Understand how to setup the 3300 / 5300 GWR to work in different applications
- Properly troubleshoot the 3300 & 5300 GWR and the Installation using Radar Master software

COURSE 2396 **CEUs: 0.7**

Rosemount Guided Wave & Non-Contacting Radar Level Transmitters

Overview
This course is designed for those individuals responsible for the installation, configuration, calibration / verification and maintenance of the Rosemount 5408 Non-Contacting & 5300 Guided Wave Radar (GWR) HART Level Transmitter. This 1-day course uses lecture and labs to maximize the hands-on experience and teach the student how to install, configure, troubleshoot and maintain the Rosemount 5408 & 5300 Series HART Radar Level Transmitters

Prerequisites
Knowledge of basic level and interface fundamentals and instrumentation.

Topics

- 5408 & 5300 Overview and Principles of Operation
- Installation of the 5408 & 5300 Radar
- Configuration of the 5408 & 5300 Radar
- Radar Master Software Operation
- Instrument Inspector Software Operation
- Calibration, Verification and Adjustments
- Troubleshooting and Maintenance
- Tank & Application / Probe Troubleshooting and Echo Handling Using Radar Master Software

Objectives
Students who complete this course will be able to:

- Explain the principles of operation of the 5408 & 5300 radar
- Identify 5408 & 5300 parts and explain their functionality
- Properly install and wire the 5408 & 5300 Radar
- Configure and test the 5408 & 5300 Radar
- Properly troubleshoot the 5408 & 5300 Radar transmitter and installation using Radar Master software

COURSE 2200 **CEUs: 0.7**

Rosemount Liquid Analysis pH, Conductivity & ORP Theory

Overview

This 1-day course provides a solid theoretical background in pH, conductivity and ORP measurements. Students will:

- Understand how much measurement is made
- Recognize installation / application problems
- Learn configuration / calibrate procedures
- How to implement a maintenance program Troubleshooting problems using diagnostics

Topics

- What is pH / Conductivity / ORP
- How pH / Conductivity / ORP Measurements are Made
- Physical Process Properties and How
- They Affect On-Line Measurements
- Proper Calibration Techniques
- Cleaning and Maintenance of a Sensor
- How to Decipher Diagnostics Readouts
- pH / Conductivity Sensor Overview
- pH / Conductivity / ORP Analyzer

COURSE 2205 **CEUs: 0.7**

Amperometric Measurement Theory: Chlorine, Dissolved Oxygen & Ozone

Overview

This 1-day course provides insight into the complicated amperemetric measurements of Chlorine, Dissolved Oxygen and Ozone. Students will learn the concepts of how amperometric sensor work and how to calibrate each type of measurement.

Student will:

- Differentiate the various species of chlorine
- Implement a proper maintenance program
- Use diagnostics to troubleshoot problems

Topics

- Amperometric Measurement Theory
- Chlorine / Dissolved Oxygen / Ozone
- Calibration Produces for Each Meas.
- Maintenance & Troubleshooting Tips

COURSE 2800 **CEUs: 1.4**

Rosemount Liquid Analysis General pH, Conductivity, and ORP Theory

Overview

This 2-day course combines lectures with bench-top labs and uses the interactive plant for scenario-based training. Target students are individuals responsible for the installation, configuration, calibration and maintenance of Rosemount Analytical pH, Conductivity, and ORP sensors and analyzers. Students shall apply classroom knowledge directly to the interactive plant scenario labs. Be ready to learn in a “real world” plant environment.

Topics

- Identify Sensor Parts and Functionality
- Explain the Principles of Operation of pH, Conductivity, and ORP sensors
- Configure, Calibrate and Test Analyzers
- Properly Install and Troubleshoot pH, Conductivity, and ORP Sensors Along with Analyzers
- Students shall ensure proper PPE and safety measures while working on the plant

COURSE 2153 **CEUs: 0.7**

Rosemount Oxygen Flue Gas Analyzer Model No. OXT & 6888

Overview
This 1-day course covers combustion measurement principles and the theory of operation of oxygen analyzers. The class will discuss the installation, operation, calibration and maintenance of the Rosemount 6888A Oxygen Analyzers.

Topics
- Combustion Requirements
- Methods of Oxygen Analysis
- Combustion Efficiency
- Zirconia (ZrO2) Oxygen Analysis
- Theory of Operation
- Oxygen Analyzer
  - » Installation
  - » Hardware
  - » Maintenance
  - » Troubleshooting
  - » HART Communication

COURSE 2154 **CEUs: 0.7**

Rosemount OCX800 Oxygen & Combustibles Transmitter

Overview
This 1-day course covers combustion measurement principles and the theory of operation for oxygen analyzers in general and the installation, operation, calibration and maintenance of the Rosemount OCX8800 Analyzers.

Topics
- Combustion Requirements
- Methods of Oxygen Analysis
- Combustion Efficiency
- Zirconia (Zr)2) Oxygen Analysis
- Theory of Operation
- Oxygen Analyzer
- COe Analyzer
- Hart Communications

Objectives
Theory of operation, combustion requirements, methods of oxygen analysis, typical uses of oxygen analysis, combustion efficiency, zirconia (ZrO2) oxygen analysis, COe analyzer: installation, hardware overview, maintenance, and troubleshooting.

COURSE 2110 **CEUs: 2.1**

Rosemount MLT Process Gas Analyzers

Overview
This 3-day course is a classroom training where students learn principles and practical operation of MLT analyzers. Through hands-on training, the student will learn on how to install, maintain, and troubleshoot the MLT analyzer. Using MLT Analyzer demo units students will:

- Understand the Photometric measurement principles such as the theory of Infrared and Ultraviolet Spectrometry, Paramagnetic and Thermal Conductivity
- Learn the signal processing of the electronic boards.
- Learn the test procedure for troubleshooting and diagnostics

Prerequisites
Basic Knowledge of PGA Analyzers would be helpful

Topics

- Introduction to the function of Physical parts
- Function of Electronic boards
- Test points and procedure
- Mechanical Assembly / Disassembly
- Programming of software parameters
- Calibration setup manual (Auto calibration when available)Analog outputs, and Digital Inputs / Outputs
- Save / Load configuration functionality
- Spare parts

COURSE 2170 **CEUs: 2.1**

Rosemount X-Stream Process Gas Analyzers

Overview
This 3-day course is a classroom training where students learn principles and practical operation of XE analyzers. Through hands-on training, the student will learn on how to install, maintain, and troubleshoot the XE analyzer. Using XE Analyzer demo units students will:

- Understand the Photometric measurement principles such as the theory of Infrared and Ultraviolet Spectrometry, Paramagnetic and Thermal Conductivity
- Learn the signal processing of the electronic boards.
- Learn the test procedure for troubleshooting and diagnostics

Prerequisites
Basic Knowledge of PGA Analyzers would be helpful

Topics

- Introduction to the function of Physical parts
- Function of Electronic boards
- Test points and procedure
- Mechanical Assembly / Disassembly
- Programming of software parameters
- Calibration setup manual (Auto calibration when available) Analog outputs, and Digital Inputs / Outputs and Modbus setup
- Save / Load configuration functionality
- Spare parts
- Troubleshooting Procedure

COURSE 5000 **CEUs: 2.1**

Rosemount Laser (QCL) Analyzer Level 1

Overview

In this 3-day course is a classroom training where students learn principles and hands-on training with CT5000 analyzers series. Through hands-on training, the student will learn on how to install, maintain, and troubleshoot the CT5000 analyzer series.

- Understand the QCL / TDL technology measurement principles such as the theory of Infrared and near Infrared Spectrometry,
- Learn the signal processing of the electronic boards.
- Learn the test procedure for troubleshooting and diagnostics

Prerequisites

Basic Knowledge of process gas analyzers would be helpful

Topics

Using CT5000 Analyzer demo units students will:

- Start-up CT5000s
- Install CT500s, including the connection of gas, power, and data
- Configure CT5000s using student laptops and the local operator interface
- Determine and perform the appropriate calibration
- Perform periodic and preventative cleaning and maintenance
- Verify the analyzer is operating correctly using functional testing
- Identify and troubleshoot common issues on Pulse & FIT's of measuring components.
- Save / Load configuration functionality
- Spare parts

GAS CHROMATOGRAPH

COURSE R4100 **CEUs: 2.1**

Rosemount 500 Gas Chromatograph Introduction

Overview
This 3-day course provides students with a basic understanding of how a gas chromatograph works, emphasizing chromatograph fundamentals and basic theory.

Topics
- Reviewing Basic Chromatography Principles
- Understanding Chemistry, Flow Configuration and Gas Systems
- Understanding Basic Sample Systems
- Working with Chromatograph Hardware
- Setting Timed Events, Retention Times and Response Factors
- Understanding Data Calculations
- Identifying Problems Using Chromatograms

COURSE R4105 **CEUs: 2.1**

Rosemount 700XA & 1500XA Gas Chromatographs Introduction

Description
This 3-day course gives students a basic understanding of how the Rosemount 700XA and 1500XA gas chromatograph work, emphasizing chromatograph fundamentals and basic theory.

Topics
- Reviewing Chromatography Principles
- Understanding Chemistry, Flow Configuration, and Gas Systems
- Reviewing Sample Systems
- Working with Chromatograph Hardware
- Setting Timed Events, Retention Times, and Response Factors
- Understanding Data Calculations
- Reading Chromatograms
- Calibrating a Gas Chromatograph

COURSE R4170 **CEUs: 2.1**

Rosemount 370XA Gas Chromatograph Intermediate

Overview
This 3-day training is a level 1 course and includes theory, Operations & Maintenance practices for the Rosemount 370XA Gas Chromatograph. Module overview, hardware and software overview as well as basic troubleshooting skills.

Topics
- Chromatographic Theory
- Detector Theory
- Understanding Chromatograms
- Startup Procedures
- Natural Gas Sample Handling
- Using 370XA Software Assistants
- Cal-Saver™
  Running Auto Valve Timing
- Module Initializations
- Calibrations, Validation & Routine Maintenance (Valve Rebuilding)
- Troubleshooting the module
- 370XA Hardware
- MON2020 Software

With a wide selection of sensors, analyzers, gas chromatographs and other measurement and analysis technologies, Rosemount Analytical helps customers streamline process performance with innovative improvements that **increase throughput, minimize energy usage, maximize asset life** and take advantage of continuous online diagnostics for amazing results.

COURSE R4210 **CEUs: 3.5**

Rosemount 500 Process Gas Chromatograph Intermediate

Overview
This 5-day course is appropriate for those who have either worked with a chromatograph for at least six months or completed the 'Introduction to Gas Chromatographs' course. It prepares participants to operate and repair a Model 500 gas chromatograph.

Prerequisites
'Introduction to Gas Chromatographs' course or equivalent knowledge

Topics
- Understanding Gas Chromatography and a Gas Chromatograph
- Using the Basic Chromatograph System in Process Gas Analysis
- Understanding Carrier and Calibration Gas Systems
- Installing and Operating MON Software
- Applying Chromatograph Integration
- Techniques and Post-Analysis Calculations
- Using the Chromatograph to identify Problems
- Setting Timed Events, Retention Times, and Response Factors
- Starting Up a Gas Chromatograph
- Understanding Sample Handling Systems
- Verifying Proper Operation -Gas Chromatograph
- Troubleshooting the 2350A Controller
- Configuring the 2350A Controller User Directory Outputs
- Conducting Preventative Maintenance
- Communicating to Other Devices
- Reviewing Spare Parts Recommendations

COURSE R4212 **CEUs: 2.8**

Rosemount Operation and Maintenance of Model 700 Gas Chromatographs

Overview
This 4-day course is appropriate for those who have either worked with a chromatograph for at least six months or completed the 'Introduction to Gas Chromatographs' course. It prepares participants to operate and repair a Model 500 gas chromatograph.

Prerequisites
'Introduction to Gas Chromatographs' course or equivalent knowledge

Topics
- Understanding Gas Chromatography and a Gas Chromatograph
- Using the Basic Chromatograph System in Process Gas Analysis
- Understanding Carrier and Calibration Gas Systems
- Installing and Operating MON Software
- Applying Chromatograph Integration
- Techniques and Post-Analysis Calculations
- Using the Chromatograph to identify Problems
- Setting Timed Events, Retention Times, and Response Factors
- Starting Up a Gas Chromatograph
- Understanding Sample Handling Systems
- Verifying Proper Operation -Gas Chromatograph
- Troubleshooting the 2350A Controller
- Configuring the 2350A Controller User Directory Outputs
- Conducting Preventative Maintenance
- Communicating to Other Devices
- Reviewing Spare Parts Recommendations

COURSE R4213 **CEUs: 2.8**

Rosemount Operation and Maintenance of 700XA Gas Chromatographs

Overview
This 4-day course is appropriate for those who have either worked with a chromatograph for at least six months or completed the 'Introduction to Gas Chromatographs' course. It prepares participants to operate and repair a 700XA gas chromatograph.

Prerequisites
'Introduction to Gas Chromatographs' course or equivalent knowledge

Topics
- Understanding Gas Chromatography and a Gas Chromatograph
- Using the Basic Chromatograph System in Process Gas Analysis
- Understanding Carrier and Calibration Gas Systems
- Installing and Operating MON Software
- Applying Chromatograph Integration
- Techniques and Post-Analysis Calculations
- Using the Chromatograph to Identify Problems
- Setting Timed Events, Retention Times, and Response Factors
- Starting Up a Gas Chromatograph
- Understanding Sample Handling Systems
- Verifying Proper Operation Gas Chromatograph
- Conducting Preventative Maintenance
- Communicating to Other Devices
- Reviewing Spare Parts Recommendations

COURSE R4311 **CEUs: 3.5**

Rosemount 500 Process Gas Chromatograph Advanced

Overview
This 5-day course is most valuable to those with three years of chromatography experience, or those who have completed the introductory 'Operation and Maintenance of Gas Chromatographs' course. Participants will develop an advanced understanding of gas chromatograph operation, troubleshooting, and maintenance. Training becomes customized when students present application information. Given that data, the experienced instructor will look closely at specific applications and offer participants insight.

Prerequisites
Students attending this course must have completed either of these Operations & Maintenance courses: R4210, R4212, or have 3 years of advanced chromatography experience.

Topics
- Understanding Chromatograph Flow Configurations
- Overhauling Valves
- Reviewing Thermal Conductivity, Flame Ionization, and Flame Photometric Detectors
- Understanding Sample / Carrier / Calibration Gas Systems
- Working with and troubleshooting the Rosemount Analytical 2350A Controller
- Installing and Using MON Software for Integration and Calibration
- Setting Timed Events, Retention Times, and Response Factor Calculations
- Understanding Startup Procedures
- Setting Valve Timing and Flows with Different Flow Configurations
- Checking for Proper Separation and Analyzing Gas Chromatographs
- Verifying Proper Operation of the Gas Chromatograph
- Troubleshooting the Chromatograph and 2350A Controller
- Configuring Reporting Details and Control Outputs
- Conducting Preventative Maintenance
- Communicating to Other Devices
- Reviewing Spare Parts Recommendations

COURSE R4315 **CEUs: 3.5**

Rosemount 700XA & 1500XA Process Gas Chromatographs Advanced

Overview
This 5-day course equips students with a full understanding of many advanced techniques used in process gas chromatography. An experienced instructor and focused material enable students to troubleshoot a variety of field issues for the Rosemount 700XA & 1500XA GC.

Prerequisites
Students attending this course must have completed either of Operations & Maintenance course R4213 / R4214 or have 3 years of advanced chromatography experience.

Topics
- Setting Valve Timing
- Hardware Troubleshooting
- Mixture Adjustments for FID
- Mixture Adjustment for FPD
- Verifying proper operation of the Gas Chromatograph
- Overview of Model 1500XA
- Liquid Sample Injection
- Review of Sample System Techniques
- Calibration and Accuracy Checks
- Recovery of GC After Analysis Interruption
- GC Start-up After Overhaul
- Communicating to other devices
- Understanding flow settings for various flow configurations
- Understanding when to overhaul valves

GAS CHROMATOGRAPH

COURSE R4400 **CEUs: 2.8**

Rosemount 470XA Process Gas Chromatograph

Overview
This 4-days course provides students with a basic understanding of how a gas chromatograph works with emphasizing fundamentals, basic theory and hands-on (Labs).

Prerequisites
Introduction to Gas Chromatographs' course or equivalent knowledge.

Topics
- Understanding Gas Chromatography and a Gas Chromatograph
- Using the Basic Chromatograph System in Process and Natural Gas Analysis
- Understanding Carrier and Calibration Gas Systems and its importance
- Columns Separation, Detector Theory & Techniques (Sample injection, BF, DC, HC) and Post-Analysis Calculations
- Hardware : CPU , LOI, Power supply, filed termination board and in & out electrical connection
- Installing and Operating of MON2020 Software
- Applying Chromatograph Integration & Peak identifying
- Using the Chromatograph to Identify Problems
- Setting Timed Events, Retention Times and Response Factors
- Verifying Proper Operation – Gas Chromatograph (valve timing, Calibration & Validation)
- Starting Up a Gas Chromatograph
- Understanding Sample Handling Systems
- Conducting Preventative Maintenance
- Communicating to Other Devices
- Reviewing Spare Parts Recommendations
- Labs : Diaphragm valve rebuilding, Vent flow measurement, TCD detector cold test, Valve timing, final Calibration & Verify the response factor etc..

Audience
This course is for engineers, managers, technicians, and others that are new to Gas Chromatographs. This course includes the basic practical aspects of Gas Chromatographs and sample handling system. It prepares participants to operate and repair a 470XA gas chromatograph.

COURSE FG2100 **CEUs: 2.1**

Basic Course on Flame & Gas Detection

Overview
This is a 3-day basic course about Flame and Gas Detection.

Prerequisites:
Students attending this course must have 1 year of experience on operation and maintenance of Flame & Gas Detection Systems.

Topics

Flame Detection Rosemount 975 Series
- Introduction to Flame detection principals
- Types of flame detection and its applications
- Ultra Violet (UV), Infra Red (IR), UV/IR and Multi-Spectrum Infrared (MSIR)
- Installation, Commissioning, Configuration, Operation, Calibration & Maintenance
- Causes of false alarms from Flame Detection & ideas to minimize the alarms

Point Gas Detection: Millennium II Series, Rosemount 925FGD, Rosemount 625IR and Rosemount 928 Wireless
- Introduction to Gas detection principals
- Types of Gas detectors available in the market and its Operating principals:
- Catalytic Bead, Infrared, Electrochemical, Metal Oxide Semiconductor and
- Wireless Gas Detectors
- Application of Point Gas Detectors
- Installation, Commissioning, Configuration, Operation, Calibration & Maintenance
- Causes of false alarms and how to minimize it

Open Path Gas Detection: Rosemount 935 & 936
- Introduction to Open Path Gas Detection
- Applications of Open Path Gas Detectors
- Types of pen Path Gas Detectors: Combustible and Toxic
- Installation, Commissioning, Configuration, Operation, Calibration & Maintenance
- Causes of false alarms and how to minimize it

Ultrasonic Gas Leak Detection: Incus GDU
- Introduction to Ultrasonic Gas Leak Detector (UGLD)
- Applications using UGLD
- Site Mapping of Background Noise
- Installation, Commissioning, Configuration, Operation, Calibration and Maintenance
- Causes of false alarms and how to minimize it

COURSE RTG 101 **CEUs: 3.5**

Rosemount Tank Gauging System

Overview
This 5-day Tank Gauging Technical Product Training focuses on the 5900 System, our Wireless Tank Gauging System, a little bit about Pro & Rex and other field equipment relevant to the Rosemount Tank Gauging System. The training covers installation, configuration and troubleshooting of our products, as well as general TankMaster functions.

Prerequisites
- Technical Background

Topics
- System Overview
- Rosemount 2460 System Hub
- Rosemount 2410 Tank Hub
- Rosemount 5900 Gauges
- Rosemount 2230 Graphical Field Display
- Rosemount 2240S Multi-Input Temperature Transmitter
- Rosemount 5300/5408
- Field Communication and TCP/IP
- Electrical and Mechanical Installation
- System Configuration
- LNG and Other Liquefied Gases
- Emerson Wireless
- Emulation
- Overfill Prevention
- SIL
- Troubleshooting

Objectives
Students who complete this course will be able to:
- Perform Installation and Setup Procedures
- Configure Tank Gauging System
- Plan a Wireless Installation
- Perform Basic Troubleshooting

Audience
This course is for service engineers and can also be good for project and sales engineers. The course includes both practical and theoretical training and is open for employees, LBPs and customers.

COURSE RTG 102 **CEUs: 2.8**

Rosemount TankMaster Software

Overview
This 4-day TankMaster Training covers more detailed information about TankMaster functions. This course is suitable for anyone who works with TankMaster, including customers who is using WinOpi as the operator interface. The course includes both practical and theoretical training.

Prerequisites
It is required that you previously attended the RTG101 Technical Product Training course or have very good knowledge of the Rosemount Tank Gauging System.

Topics
- System Overview
- Volume Calculations
- WinOpi Tools Menu
- TankMaster Mobile
- Host Communication, TCP/IP and OPC
- TankMaster Batch
- Custom Views and Translation
- Network Basics
- TankMaster to Enraf
- Redundancy
- Floating Roof Monitoring
- Administrator Program, Backup & Restore
- TankMaster Hybrid & HTG
- Troubleshooting

Objectives
Students who complete this course will be able to:
- Perform System Configuration
- Configure Host Communication
- Properly use Redundancy
- Use Batch Handling
- Program Basic Custom Views
- Perform Basic Troubleshooting

Audience
This course is for anyone who works with TankMaster, including customers who is using WinOpi as the operator interface. The course is open for Emerson employees, LBPs and customers.

COURSE 7701

PLC Logic Developer Controller Programming

Overview
Learn programming for Emerson Controllers in this PAC Machine Edition class featuring the PACSystems RX3i Controller. This class covers programming techniques and the advanced features of the PACSystems Controller using Logic Developer PLC PAC Machine Edition software. Starting with the controller software architecture, students are taught how to effectively develop control applications using building block concepts. This course builds upon Object-Oriented concepts with PACSystems User-Defined Function Blocks (UDFBs), as well as the development of application components using Ladder Diagram (LD), Function Block Diagram (FBD) and Structured Text (ST) programming languages.

Prerequisites
Participants should be comfortable operating in a Microsoft Windows environment. Participants should have a basic understanding of electrical/control fundamentals.

Topics
- Describe Control System Architecture & Operational Fundamentals
- Operate PAC Machine Edition
- Establish and Utilize Communications to the Controller
- Configure a Controller and its Associated Hardware Modules
- Effectively Use and Create Controller Variables
- Create Projects in Ladder Diagram (LD)
- Understand and Program Arithmetic, Timer, Counter, and Move Operations
- Use Compute instruction to solve mathematical expressions
- Utilize Programming Guidelines for Developing Robust Control Applications
- Use User Defined Function Blocks (UDFBs) to Build Structured Applications
- Effectively Use the Machine Edition Toolchest as Repository for Application Building Blocks
- Create, Monitor, and Modify Running Controller Applications
- Use monitoring tools to view application execution
- Configure basic PROFINET I/O network and use PROFINET diagnostic and debugging tools

Audience
This course is intended for those who are or will be involved in the development, modification, and troubleshooting of control systems using PAC Logic Developer PLC and PACSystems Controllers.

COURSE 7704V

Movicon NExT Introduction Virtual

Overview
This course explains the basic fundamentals of the Movicon.NExT industrial software solution. The course uses lectures and labs to teach the students.

Prerequisites
Participants should be comfortable operating in a Microsoft Windows environment, and have a basic understanding of control fundamentals.

Topics
- Introduction
- Software Installation
- Programming Environment
- I/O Data Server
- Client and Surroundings
- Alarms
- Historian and Data Logger
- Trend and Data Analysis
- Text and Languages
- Security and User Management
- Schedulers and Events
- Recipes
- Web Clients

Objectives
Those who complete this class will be able to:
- Create a Movicon.NExT Project along with basic HMI screen layout with animated elements.
- Configure I/O communications with multiple I/O data sources.
- Configure Alarms, Data Logging, and Data Trending for collection and display on HMI screens.

Audience
This course is designed for process, automation or instrumentation engineers and system integrators who will be developing and configuring HMI solutions using the Movicon. NExT industrial software solution.

COURSE 7705V

Movicon NExT Advanced Virtual

Overview
This follow-up course builds on the basic fundamentals of the Movicon.NExT industrial software solution to learn how to utilize advanced features such as Power Template and 3D Graphics. The course uses lectures and labs to teach the students.

Prerequisites
Participants should be familiar with the Movicon. NExT programming environment and its basic functions.

Topics
- Screen Parametrization
- Power Templates
- Alias on Objects
- OPC-UA - Setting up and configuring in software
- VB.NET Scripting
- 21 CFR Part11 compliance
- D Graphics
- Alarm Dispatcher

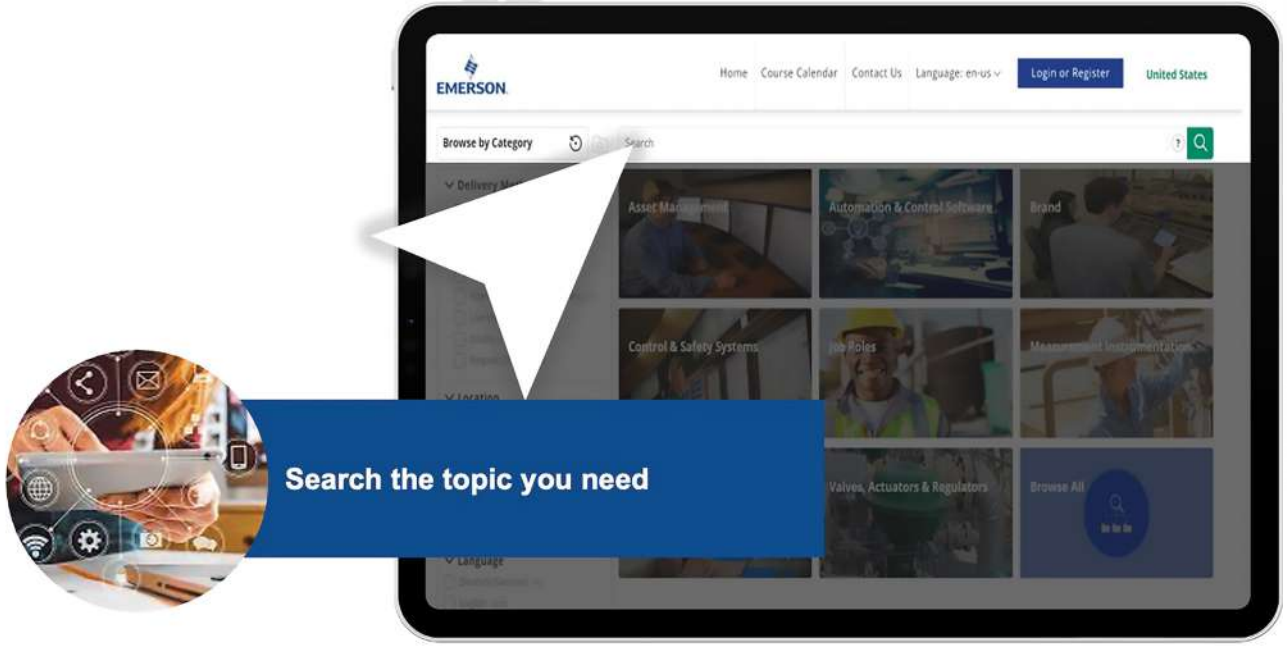
Objectives
Those who complete this class will be able to:
- Apply Movicon.NExT tools, such as Screen Parametrization, Power Templates, and Aliases for effective HMI application development.
- Set up and configure OPC-UA communications.
- Create and debug logic written in VB.NET Script
- Understand basic concepts of using 3D graphics
- Configure and apply the Alarm Dispatcher

Audience
This course is designed for process, automation or instrumentation engineers and system integrators who will be developing and configuring HMI solutions using the Movicon. NExT industrial software solution.

MyTraining

MyTraining Site

Visit for Registration
mytraining.emerson.com



Search for Courses

Browse for Upcoming Classes

Choose your Learning Style

Track your Learning History

Request for Quote, Order and more

IACET AUTHORIZED PROVIDER

Educational Services is an Authorized Provider of International Association for Continuing Education and Training (IACET) Continuing Education Units (CEU). IACET Authorized Provider Status Means our Organization:

- Demonstrates compliance with proven, research- based standards created in cooperation with the U.S. Department of Education
- Is dedicated to high standards for quality in continuing education and training
- Awards the IACET EDU, the hallmark for quality in continuing education and training

Educational Services is proud to have received Authorized Provider status. We look forward to the opportunity to share our training with you.

QUALIFICATIONS FOR ENROLLMENT

Educational Services agrees to accept for training, individuals who are not competitors of Emerson Automation Solutions in the field to which the training pertains. Educational Services will provide reasonable accommodations to students who have a physical or mental impairment that substantially limits one or more major life activities, as long as the accommodation does not put undue hardship on the company.

COURSE SCHEDULING, LOCATIONS & PRICING

Course schedule and locations including length, dates of each session and price are listed on the Educational Services MyTraining website. All prices are in U.S. Dollars. For the most up to date information call or visit our website at:
www.emerson.com / mytraining

CANCELLATIONS & TRANSFERS

If your plans or budgets change you may cancel / transfer your reservations up to 14 calendar-days prior to start of the course without incurring a cancellation charge. Limited enrollment makes it necessary to charge 50% of the full tuition for cancellations / transfers received during the 14-days prior to the start of the course, and full tuition for failure to attend without canceling. Substitutions are accepted until the first-days of class.

ARRIVAL & DEPARTURE TIME

Students should plan to arrive the-days prior to the course starting-days, as class typically begins at 8 a.m. If traveling by air, please allow sufficient time to travel to the airport and check-in when scheduling return transportation.

COURSE MATERIALS

All materials presented are copyrighted. Audio and video recording is prohibited and no material or portion of any course may be reproduced in any manner without prior written approval. All necessary documentation, catalogs, and literature are included in the course tuition. The training materials were developed by and for Emerson Educational Services exclusive use.

2026 TRAINING CALENDAR BY COUNTRY

TRAINING CALENDAR - DUBAI, UAE

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PROCESS SYSTEMS AND SOLUTIONS												
7018 DeltaV Hardware& Troubleshooting	6-9									12-15		
7409 DeltaV Implementation using DeltaV Live Introduction	12-16									19-23		
7027 DeltaV Systems Administration			4-8								2-6	
7023 DeltaV Information Technology for Automation Personnel							6-8					
7028 DeltaV Virtualization Administration				8-10			22-24					
7229 DeltaV Virtualization with HCI		16-20					27-31					
ASSET RELIABILITY												
2031 Vibration Analysis Category I				13-16								
2032 Vibration Analysis Category II											2-6	
2033V Vibration Analysis Category III												7-11
OVATION												
OV100 Ovation Data Acquisition	12-16											
OV200 Building and Maintaining Ovation Control	19-23											
OV215C Ovation Software Project Custom Expression of Interest								3-14				
ENERGY AND TRANSPORTATION SOLUTION												
RA331 Energy and Transportation Solution ControlWave Troubleshooting Configuration	26-28							17-19				
RA441 Energy and Transportation Solution ControlWave Designer Introduction		3-5										7-9
RA902 Energy and Transportation Solution Flo Boss S600+ Combined Config600	26-30										16-20	
FLOW												
2380 Micro Motion Coriolis Product					12-13							
ROXAR												
ROX016 Roxar 2600 Multiphase Flow Meter	14-15											
ROSEMOUNT MEASUREMENT												
2326 Rosemount Process Measurement Pressure and Temperature Products											10-13	

TRAINING CALENDAR - DUBAI, UAE

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ROSEMOUNT ANALYTICAL												
R4213 Operation & Maintenance of 700XA Gas Chromatographs										27-30		
TANK GAUGING												
RTG 101 Tank Gauging Technical Product Training						22-26						
RTG 102 Tank Master Training						29 -2						
FISHER CONTROL												
1300 Fisher Control Valve Engineering Introduction				1-3								7-9
1350 Fisher Control Valve Engineering Advanced				6-8								7-9
1400 Fisher Valve Trim & Body Maintenance	5-7					3-5						
1751 Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction	12-14				13-15							
1752 Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers			3-5		13-15							
1759 Fisher Diagnostic Data Interpretation Using ValveLink Software for Fieldvue						1-3						
PRESSURE MANAGEMENT												
PRM-MEA-102 Direct Spring Operated Pressure Relief Valve Maintenance ASME VIII							14-16					
PRM-MEA-103 High Pressure Pilot Operated Pressure Relief Valve Maintenance				6-8								
INDUSTRIAL AND FACTORY AUTOMATION												
7701 PLC Logic Developer Controller Programming					25-28						9-13	

TRAINING CALENDAR -DTV, SAUDI ARABIA

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PROCESS SYSTEMS AND SOLUTIONS												
7039 AMS Device Manager with DeltaV					4-7				14-17			
7409 DeltaV Implementation using DeltaV Live Introduction		15-19					5-9					
7018 DeltaV Hardware& Troubleshooting		9-12		27-30								
7229 DeltaV Virtualization with HCI				12-16								
ASSET RELIABILITY												
2031 Vibration Analysis Category I	11-14					21-24				4-7		
2032 Vibration Analysis Category II		1-5			3-7				6-10			
2068 AMS Machinery Manager Introduction				26-29							15-18	
2076 AMS 2140 Introduction												
2033 Vibration Analysis Category III				5-9					20-24			
OVATION												
OV100 Ovation Data Acquisition				26-30								
OV200 Building and Maintaining Ovation Control				13-17								
OV215C Ovation Software Project-Custom - Expression of Interest					3-14							
ENERGY AND TRANSPORTATION SOLUTION												
RA331 Energy and Transportation Solution ControlWave Troubleshooting Configuration		9-11									2-4	
RA441 Energy and Transportation Solution ControlWave Designer Introduction					12-14							15-17
RA902 Energy and Transportation Solution Flo Boss S600+ Combined Config600							5-9					
FLOW												
2380 Micro Motion Coriolis Product		10-11										
TANK GAUGING												
RTG 101 Tank Gauging Technical Product Training									7-11			
RTG 102 Tank Master Training									14-17			

TRAINING CALENDAR -DTV, SAUDI ARABIA

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
FISHER CONTROL												
1300 Fisher Control Valve Engineering Introduction					12-14						4-6	
1400 Fisher Valve Trim & Body Maintenance							14-16					6-8
1751 Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction							21-23					13-15
1752 Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers			24-26					2-4				

TRAINING CALENDAR - DOHA, QATAR

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PROCESS SYSTEMS AND SOLUTIONS												
7039 AMS Device Manager with DeltaV								17-20				
7409 DeltaV Implementation using DeltaV Live Introduction				19-23								
7018 DeltaV Hardware & Troubleshooting				13-16				10-13				
7229 DeltaV Virtualization with HCI								23-27				
7226 DeltaV Cybersecurity Administration											17-19	
ASSET RELIABILITY												
2031Vibration Analysis Category I								23-27				
FLOW												
2380 Micro Motion Coriolis Product										20-21		
ROSEMOUNT MEASUREMENT												
2305 Rosemount 3051 Pressure Transmitter						01						
2321 Rosemount 3144P Temperature Transmitters						02						
2336 Rosemount 5408 Non-Contacting Radar Level Transmitter						03						
2337 Rosemount 5300 Guided Wave Radar Level Transmitter						04						
FISHER CONTROL												
1300 Fisher Control Valve Engineering Introduction		17-19										
1751 Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction					3-5							
1752 Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers						1-3						

TRAINING CALENDAR - LAGOS, NIGERIA

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PROCESS SYSTEMS AND SOLUTIONS												
7018 DeltaV Hardware & Troubleshooting							21-24					
7039 AMS Device Manager with DeltaV							28-31					
FISHER CONTROL												
1751 Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction								26-28				

TRAINING CALENDAR - LUANDA, ANGOLA

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ROXAR												
ROX016 Roxar 2600 Multiphase Flow Meter			17-18									
FISHER CONTROL												
1751 Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction									15-17			

TRAINING CALENDAR - AHMADI, KUWAIT

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ENERGY AND TRANSPORTATION SOLUTIONS												
RA331 Energy and Transportation Solutions ControlWave Troubleshooting Configuration							13-15					
RA441 Energy and Transportation Solutions ControlWave Designer Introduction								3-5				
ROSEMOUNT ANALYTICAL												
R4213 Operation and Maintenance of 700XA Gas Chromatographs								10-13				

TRAINING CALENDAR - MUSCAT, OMAN

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ROSEMOUNT ANALYTICAL												
R4213 Operation and Maintenance of 700XA Gas Chromatographs				20-23								

TRAINING CALENDAR - VIRTUAL

COURSE DETAILS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PROCESS SYSTEMS AND SOLUTIONS												
7226V DeltaV CyberSecurity Administration					19-21							7-9
7023V DeltaV Information Technology for Automation Personnel									2-4			
ASSET RELIABILITY												
2031V Vibration Analysis Category I							20-23					
2051 Vibration Analysis Category III			9-11									
ENERGY AND TRANSPORTATION SOLUTIONS												
RA331V Energy and Transportation Solutions ControlWave Troubleshooting Configuration			9-11									
RA902V Energy and Transportation Solutions FloBoss S600+ Combined Config600				13-17						12-16		
FLOW												
2380 Micro Motion Coriolis Product												8-9
INDUSTRIAL AND FACTORY AUTOMATION												
7701V PLC Logic Developer Controller Programming				27-30			6-9		7-10			14-17
7704V Movicon NExT Introduction		9-11								19-21		
7705V Movicon NExT Advanced		12-13								22-23		

2026 TRAINING CALENDAR BY SUBJECT

TRAINING CALENDAR - PROCESS SYSTEMS AND SOLUTIONS

PROCESS SYSTEMS AND SOLUTIONS				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
7039 AMS Device Manager with DeltaV	Dhahran Techno Valley, KSA	4-7 May 14-17 Sep	4 Days	$4,550
	Doha, Qatar	17-20 Aug		
	Lagos, Nigeria	28-31 Jul		
7409 DeltaV Implementation using DeltaV Live Introduction	Dubai, UAE	12-16 Jan 19-23 Oct	4 1/2 Days	$5,050
	Dhahran Techno Valley, KSA	15-19 Feb 5-9 Jul		
	Doha, Qatar	19-23 Apr		
7018 DeltaV Hardware& Troubleshooting	Dubai, UAE	6-9 Jan 12-15 Oct	4 Days	$4,750
	Dhahran Techno Valley, KSA	9-12 Feb 27-30 Apr		
	Lagos, Nigeria	21-24 Jul		
	Doha, Qatar	13-16 Apr 10-13 Aug		
7027 DeltaV Systems Administration	Dubai, UAE	4-8 Mar 2-6 Nov	4 1/2 Days	$5,200
7028 DeltaV Virtualization Administration	Dubai, UAE	8-10 Apr 22-24 Jul	3 days	$3,850
7229 DeltaV Virtualization with HCI	Dubai, UAE	16-20 Feb 27-31 Jul	4 1/2 Days	$5,800
	Dhahran Techno Valley, KSA	12-16 Apr		
	Doha, Qatar	23-27 Aug		
7226 DeltaV Cybersecurity Administration	Dhahran Techno Valley, KSA	2-4 Jun	3 days	$3,900
	Doha, Qatar	17-19 Nov		
7226V DeltaV CyberSecurity Administration	Virtual	19-21 May 7-9 Dec	3 days	$3,900
7023 DeltaV Information Technology for Automation Personnel	Dubai, UAE	6-8 Jul	3 days	$3,700
7023V DeltaV Information Technology for Automation Personnel Virtual	Virtual	2-4 Sep	3 days	$3,700

TRAINING CALENDAR - PROCESS SYSTEMS AND SOLUTIONS

PROCESS SYSTEMS AND SOLUTIONS - ON DEMAND			
COURSE DETAILS	LOCATION	DURATION	COST PER STUDENT, US$
7020 AMS Device Manager	Call for Schedule	3 Days	$3,650
7039 AMS Device Manager with DeltaV		4 Days	$4,550
7409 DeltaV Implementation using DeltaV Live Introduction		4 1/2 Days	$5,050
7018 DeltaV Hardware& Troubleshooting		4 Days	$4,750
7027 DeltaV Systems Administration		4 1/2 Days	$5,200
7028 DeltaV Virtualization Administration		3 days	$3,850
7229 DeltaV Virtualization with HCI		4 1/2 Days	$5,800
7226 DeltaV Cybersecurity Administration		3 days	$3,900
7226V DeltaV CyberSecurity Administration		3 days	$3,900
7023 DeltaV Information Technology for Automation Personnel		3 days	$3,700
7023V DeltaV Information Technology for Automation Personnel Virtual		3 days	$3,700
7032 DeltaV Fieldbus Devices Configuration & Control		4 Days	$4,800
7037 DeltaV & Communication Bus Interfaces		3 1/2 Days	$3,900
7412 DeltaV Live Continuous Operation		2 Days	$1,750
7012 DeltaV Continuous operation		2 Days	$1,750
7014 DeltaV Batch Operation		3 Days	$2,200
7016 DeltaV Systems Batch Implementation		4 1/2 Days	$5,050
7017 DeltaV Implementation II Intermediate		4 1/2 Days	$5,000
7029 DeltaV Virtualization with VRTX		4 1/2 Days	$5,400
7025 DeltaV Operate Graphics - Advance		4 1/2 Days	$5,200
7304 DeltaV SIS with Electronics Marshaling Maintenance		3 Days	$3,800
7026 DeltaV Cybersecurity		4 1/2 Days	$5,600
7201 DeltaV Advanced Control Suite		4 1/2 Days	$5,200
7999 DeltaV New Features		2 Days	$1,400
7305 DeltaV SIS Implementation		4 1/2 Days	$5,050
7009 DeltaV Operate Implementation I Introduction		4 1/2 Days	$5,050
7501V DeltaV Back and Recovery V		1 Day	$1,400
7425 DeltaV Live Graphics Interface Advanced		4 1/2 Days	$5,050
9025 DeltaV Control Loop Introduction		4 1/2 Days	$4,100
7400 DeltaV Standalone PK Controller		1 Day	$1,400
7650V DeltaV Agile Ops System administration Virtual		3 Days	$3,900
7620V Alarm Management Virtual		3 Days	$2,700
7621 DeltaV AgileOps		3 Days	$3,900

TRAINING CALENDAR - ASSET RELIABILITY

ASSET RELIABILITY				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
2031 Vibration Analysis Category I	Dhahran Techno Valley, KSA	11-14 Jan 21-24 Jun 4-7 Oct	4 Days	$3,100
	Dubai, UAE	13-16 Apr		
	Doha, Qatar	23-26 Aug		
2031V Vibration Analysis Category I Virtual	Virtual	20-23 Jul	4 Days	$3,100
2032 Vibration Analysis Category II	Dhahran Techno Valley, KSA	1-5 Feb 3-7 May 6-10 Sep	5 Days	$3,200
	Dubai, UAE	2-6 Nov		
2068 AMS Machinery Manager Introduction + 2076 AMS 2140 Introduction	Dhahran Techno Valley, KSA	26-29 Apr 15-18 Nov	4 Days	$3,650
2068V AMS Machinery Manager Introduction + 2076V AMS 2140 Introduction	Virtual	14-17 Dec	4 Days	$3,650
2033 Vibration Analysis Category III	Dhahran Techno Valley, KSA	5-9 Apr 20-24 Sep	5 Days	$3,300
2033V Vibration Analysis Category III	Dubai, UAE	7-11 Dec	5 Days	$3,300
2051 Time Waveform Analysis	Virtual	9-11 Mar	3 Days	$3,000

TRAINING CALENDAR - ASSET RELIABILITY

ASSET RELIABILITY - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
2069 Vibration Analysis - Introduction	Call for Schedule		2 Days	$2,050
2031 Vibration Analysis Category I			4 Days	$3,100
2031V Vibration Analysis Category I Virtual			4 Days	$3,100
2032 Vibration Analysis Category II			5 Days	$3,200
2068 AMS Machinery Manager Introduction + 2076 AMS 2140 Introduction			4 Days	$3,650
2068V AMS Machinery Manager Introduction + 2076V AMS 2140 Introduction			4 Days	$3,650
2033 Vibration Analysis Category III			5 Days	$3,300
2033V Vibration Analysis Category III			5 Days	$3,300
2051 Time Waveform Analysis			3 Days	$3,000
E2069 Machinery Health Vibration Introduction			2 Hours	$500
E2140 Machinery Health AMS 2140			6 Hours	$800
2021EX Vibration Analyst Exam Category I			2 Hours	$500
2022EX Machinery Health Vibration Analyst Exam Category II			3 Hours	$600
2035/2075 Mystery PeakVue™and Autocorrelation			3 Days	$3 600
2074 AMS Machinery Manager Intermediate			3 Days	$3,650
2088 AMS Online Prediction Operation and Maintenance			4 Days	$3,500
2094 AMS 2140 Advanced			2 Days	$3,000
2016 Balancing Theory & Application for AMS 2140			2 Days	$3,500
2051 Time Waveform Analysis			3 Days	$3,500
2070 or 2070V AMS Machinery Manager Advanced or Virtual			4 Days	$3,200
2082A + 2082B Level I & Level 2 Lubrication With Certification			3 Days	$3,200
2082A + 2082B V Level I & Level 2 Lubrication With Certification Virtual			3 Days	$3,200
2070CV AutoStat for AMS Suite: Machinery Health Manager			2 Days	$2,000

TRAINING CALENDAR - OVATION

OVATION				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
OV100 Ovation Data Acquisition	Dubai, UAE	12-16 Jan	5 Days	$5,200
	Dhahran Techno Valley, KSA	26-30 Apr		
OV200 Building and Maintaining Ovation Control	Dubai, UAE	19-23 Jan	5 Days	$5,200
	Dhahran Techno Valley, KSA	13-17 Apr		
OV215C Ovation Software Project-Custom - Expression of Interest	Dubai, UAE	3-14 Aug	10 Days	$10,300
	Dhahran Techno Valley, KSA	3-14 May		

TRAINING CALENDAR - OVATION

OVATION - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
OV100V Ovation Data Acquisition Virtual	Call for Schedule		5 Days	$5,200
OV200V Building and Maintaining Ovation Control Virtual			5 Days	$5,200
OV210 Building Ovation Graphics			5 Days	$5,200
OV210V Building Ovation Graphics Virtual			5 Days	$5,200
OV010 Ovation Operator			3 Days	$3,200
OV150V Ovation Maintenance Virtual			5 Days	$5,200
OV246 Ovation Process Historian Report Building			3 Days	$3,200
OV248 Ovation Enterprise Data Server			3 Days	$3,200
OV275 Ovation AMS Suite: Intelligent Device Manager			2 Days	$2,700
OV280 Ovation SCADA System			3 Days	$3,200
OV330 Ovation Control Techniques Advanced			5 Days	$5,200
OV230 Ovation System Administration			5 Days	$5,200
OV245 Ovation Process Historian			5 Days	$5,200
OV270 Ovation HART & Smart Devices			2 Days	$2,700
OV300 Ovation Troubleshooting			5 Days	$5,200
OV310 Ovation Graphics Advanced			4 Days	$4,400
OV360 Ovation Security Administration			5 Days	$5,200
OV400 Ovation Base Certification			5 Days	$5,200
OV215 Ovation Software Project			10 Days	$10,300
OV235 OvationSIS Implementation			5 Days	$5,200
OV295 Ovation Serial Link Controller / RLC			3 Days	$3,200
OV355 Ovation Wireless with Wireless HART			2 Days	$2,700
OV365 Ovation Security Center			5 Days	$5,200
OV216 Ovation Hardware Project			5 Days	$5,200
OV370 Ovation Turbine Control			5 Days	$5,200
OV380 Ovation Boiler Control			5 Days	$5,200
OV420 Ovation (Admin) Certification			5 Days	$5,200

TRAINING CALENDAR - ENERGY AND TRANSPORTATION SOLUTION

ENERGY AND TRANSPORTATION SOLUTIONS				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
RA331 Energy and Transportation Solution ControlWave Troubleshooting Configuration	Dubai, UAE	26-28 Jan 17-19 Aug	3 Days	$2,250
	Dhahran Techno Valley, KSA	9-11 Feb 2-4 Nov		
	Kuwait	13-15 Jul		
RA331V Energy and Transportation Solution ControlWave Troubleshooting Configuration	Virtual	9-11 Mar	3 Days	$2,250
RA441 Energy and Transportation Solution ControlWave Designer Introduction	Dubai, UAE	3-5 Feb 7-9 Dec	2 1/2 Days	$3,250
	Dhahran Techno Valley, KSA	12-14 May 15-17 Dec		
	Kuwait	3-5 Aug		
RA902 Energy and Transportation Solution Flo Boss S600+ Combined Config600	Dubai, UAE	26-30 Jan, 16-20 Nov	4 1/2 Days	$5,500
	Dhahran Techno Valley, KSA	5-9 Jul		
RA902V Energy and Transportation Solution Flo Boss S600+ Combined Config600	Virtual	13-17 Apr 12-16 Oct	4 1/2 Days	

ENERGY AND TRANSPORTATION SOLUTIONS - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
RA442 Energy and Transportation Solution ControlWave Designer Communication Programming	Call for Schedule		1 1/2 Days	$2,000
RA1230 Energy and Transportation Solution FlossBoss Troubleshooting Configuration for Gas Measurement			2 1/2 Days	$2,900
RA1230V Energy and Transportation Solution FlossBoss Troubleshooting Configuration for Gas Measurement Virtual			2 1/2 Days	$2,900
RA900 Energy and Transportation Solution Flo Boss S600+/Config600 Introduction			2 Days	$2,800
RA901 Energy and Transportation Solution Flo Boss S600+/Config600 Advanced			2 1/2 Days	$5,000
RA801 Energy and Transportation Solution OpenEnterprise SCADA Systems V3.x Introduction			4 1/2 Days	$3,900
RA802 Energy and Transportation Solution OpenEnterprise SCADA Systems V3.x Intermediate			4 1/2 Days	$3,900

TRAINING CALENDAR - FISHER CONTROL

FISHER CONTROL				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
1300 Fisher Control Valve Engineering Introduction	Doha, Qatar	17-19 Feb	3 Days	$3,450
	Dubai, UAE	1-3 Apr 7-9 Dec		
	Dhahran Techno Valley, KSA	12-14 May 4-6 Nov		
1350 Fisher Control Valve Engineering Advanced	Dubai, UAE	6-8 Apr 7-9 Dec	3 Days	$3,450
1400 Fisher Valve Trim & Body Maintenance	Dubai, UAE	5-7 Jan 3-5 Jun	3 Days	$3,450
	Dhahran Techno Valley, KSA	14-16 Jul 6-8 Dec		
1751 Fisher HART based FIELDVUE Digital Valve Controllers using Emerson Field Communicators & ValveLink Mobile Introduction	Dubai, UAE	12-14 Jan 13-15 May	3 Days	$3,450
	Dhahran Techno Valley, KSA	21-23 Jul 13-15 Dec		
	Doha, Qatar	3-5 May		
	Angola	15-17 Sep		
	Nigeria	26-28 Aug		
1752 Fisher ValveLink Solo Software for Configuration & Calibration of FIELDVUE Digital Valve Controllers	Dubai, UAE	3-5 Mar 13-15 May	3 Days	$3,450
	Dhahran Techno Valley, KSA	24-26 Mar 2-4 Aug		
	Doha, Qatar	1-3 Jun		
1759 Fisher Diagnostic Data Interpretation Using ValveLink Software for Fieldvue	Dubai, UAE	1-3 Jun	3 Days	$3,450

FISHER CONTROL - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
7036 Fisher FOUNDATION™ Fieldbus FIELDVUE™ Digital Valve Controllers	Call for Schedule		3 Days	$3,450

TRAINING CALENDAR - PRESSURE MANAGEMENT

PRESSURE MANAGEMENT				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
PRM-MEA-102 Direct Spring-Operated Pressure Relief Valve Maintenance ASME VIII	Dubai, UAE	14-16 Jul	3 Days	$3,450
PRM-MEA-103 High Pressure Pilot Operated Pressure Relief Valve Maintenance	Dubai, UAE	6-8 Apr	3 Days	$3,450

TRAINING CALENDAR - PARTICLE AND EROSION MONITORING

PARTICLE & EROSION MONITORING - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
ROX007 Roxar Acoustic Sand Monitor	Call for Schedule		1 Day	Call for Price

TRAINING CALENDAR - ROXAR

ROXAR				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
ROX016 Roxar 2600 Multiphase Flow Meter	Dubai, UAE	14-15 Jan	2 Days	Call for Price
	Angola	17-18 Mar		

ROXAR - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
ROX001 Roxar Multiphase Meter 1900VI	Call for Schedule		3 Days	Call for Price
ROX003 Roxar Subsea Multiphase Meter			2 Days	
ROX004 Roxar Wetgas Meter			1 Day	
ROX005 Roxar Subsea Wetgas Meter			1 Day	

TRAINING CALENDAR - FLOW

FLOW				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
2380 Micro Motion Coriolis Product	Dubai, UAE	12-13 May	2 Days	Call for Price
	Dhahran Techno Valley, KSA	10-11 Feb		
	Doha, Qatar	20-21 Oct		
	Virtual	8-9 Dec		

FLOW - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
D4510 Hydrocarbon Gas Flow Measurement Systems Operation and Maintenance	Call for Schedule		2 Days	Call for Price
D4520 Hydrocarbon Liquid Flow Measurement Systems Operation and Maintenance			3 Days	
D4230/D4280 Rosemount Operation and Maintenance of Gas/Liquid Ultrasonic Meters			2 Days	
D4260/D4262 Operation and Maintenance of the S600/S600 + Flow Computers			2 Days	
D4530 Understanding Metering Systems: Applications, Operations and Maintenance			2 Days	
2340 Rosemount 8700 Series Magnetic Flowmeter Intermediate			1 Day	

TRAINING CALENDAR - ROSEMOUNT ANALYTICAL

ROSEMOUNT ANALYTICAL				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
R4213 Operation and Maintenance of 700XA Gas Chromatographs	Dubai, UAE	27-30 Oct	4 Days	Call for Price
	Oman	20-23 Apr		
	Kuwait	10-13 Aug		

ROSEMOUNT ANALYTICAL - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
2200 Rosemount Liquid Analysis pH, Conductivity & ORP Theory	Call for Schedule		1 Day	Call for Price
2800 Rosemount Liquid Analysis General pH, Conductivity & ORP Theory			2 Days	
2205 Rosemount Liquid Analysis Chlorine, Dissolved Oxygen & Ozone Amperometric Measurement Theory			1 Day	
2170 Rosemount X-Stream Process Gas Analyzers			3 Days	
2110 Rosemount MLT Process Gas Analyzers			3 Days	
FG2100 Basic Course for Flame & Gas Detection			2 Days	
R4105 Rosemount 700XA & 1500XA Gas Chromatographs Introduction			3 Days	
2154 Rosemount OCX8800 Oxygen & Combustibles Transmitter			1 Day	
R4100 Rosemount 500 Gas Chromatographs Introduction			3 Days	
2153 Rosemount Oxygen Flue Gas Analyzer Model No. OXT & 6888			1 Day	
2205 Rosemount Liquid Analysis Measurement Theory			1 Day	
R4210 Rosemount 500 Process Gas Chromatograph Intermediate			4 Days	
R4212 Operation & Maintenance of Model 700 Gas Chromatographs			4 Days	
R4311 Rosemount 500 Process Gas Chromatograph Advanced			5 Days	
R4315 Rosemount 700XA & 1500XA Process Gas Chromatographs Advanced			5 Days	
R4170 Rosemount 370XA Gas Chromatograph Intermediate			3 Days	

TRAINING CALENDAR - ROSEMOUNT MEASUREMENT

ROSEMOUNT MEASUREMENT				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
2326 Rosemount Process Measurement Pressure & Temperature Products	Dubai, UAE	10-13 Nov	4 Days	Call for Price
2305 Rosemount 3051 Pressure Transmitter	Doha, Qatar	1-Jun	1 Day	
2321 Rosemount 3144P Temperature Transmitters	Doha, Qatar	2-Jun	1 Day	
2336 Rosemount 5408 Non-Contacting Radar Level Transmitter	Doha, Qatar	3-Jun	1 Day	
2337 Rosemount 5300 Guided Wave Radar Level Transmitter	Doha, Qatar	4-Jun	1 Day	

ROSEMOUNT MEASUREMENT - ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
2308 Rosemount 3051S Pressure Transmitter	Call for Schedule		1 Day	Call for Price
2309 Rosemount DP Level & Electronic Remote Sensor (ERS) System			1 Day	
2310 Rosemount 3051S Multi-Variable Mass Flow Transmitter			1 Day	
2333 Rosemount Process Measurement Level Products			3 Days	
2327 Rosemount Process Measurement DP Flow Products			2 Days	
2370 Rosemount Fieldbus Measurement Instruments			3 Days	
2329 Rosemount Pressure, Temperature & Multi-Variable Flow Transmitters			2 Days	
2395 Rosemount 3300 & 5300 Guided Wave Radar Level Transmitters			1 Day	

TRAINING CALENDAR - TANK GAUGING

TANK GAUGING				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
RTG 101 Tank Gauging Technical Product Training	Dubai, UAE	22-26 Jun	5 Days	Call for Price
	Dhahran Techno Valley, KSA	7-11 Sep		
RTG 102 Tank Master Training	Dubai, UAE	29-Jun - 2 Jul	4 Days	
	Dhahran Techno Valley, KSA	14-17 Sep		

TANK GAUGING ON DEMAND				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
Wireless Tank Gauging Training	Call for Schedule		3 Days	Call for Price

TRAINING CALENDAR - INDUSTRIAL AND FACTORY AUTOMATION

INDUSTRIAL AND FACTORY AUTOMATION				
COURSE DETAILS	LOCATION	DATES	DURATION	COST PER STUDENT, US$
7701 PLC Logic Developer Controller Programming	Dubai, UAE	25-28 May 9-12 Nov	4 Days	$4,400
7701V PLC Logic Developer Controller Programming Virtual	Virtual	27-30 Apr 6-9 Jul, 7-10 Sep 14-17 Dec	4 Days	$4,400
7704V Movicon NExT Introduction Virtuall	Virtual	9-11 Feb 19-21 Oct	3 Days	$3,300
7705V Movicon NExT Advanced Virtual	Virtual	12-13 Feb 22-23 Oct	2 Days	$2,200

Let's Go
Let's Go
Let's Go
Let's Go

AUTHORIZED IACET PROVIDER

Subscribe to Emerson News

Stay up to date on the latest news about Emerson products, services, and events.

Middle East and Africa World Area Headquarters
Emerson FZE
P.O. Box 17033
Jebel Ali Free Zone South
Dubai, UAE
T +971 4 811 8100
F +971 4 886 5465
E-mail: mea.education@emerson.com
www.Emerson.com / MEA

EMERSON™