2018 Training Schedule

Course 1100 : Gas Regulator Technician	Date	Location
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.	TBD	Charlotte, NC
	TBD	Richmond, VA

Topics:

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

Course 1106 : Gas Regulator Troubleshooting	Date	Location
Actual gas regulator problems are simulated in the Workshops challenging the student to efficiently diagnose problems and restore the regulator to proper operation.	TBD	Charlotte, NC
	TBD	Richmond, VA

Topics:

- Self-Operated Regulator Fundamentals
- Pilot Operated Regulator Fundamentals
- Overpressure Protection
- Sizing Overview
- Stability Issues
- Installation Practices
- Regulator Troubleshooting Principles Procedures and Best Practices
- Pilot Interchangeability Practices
- Failure Analysis

Course 1300 : Control Valve Engineering	Date	Location
This 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 demonstration sizing and selection problems, plus participate in equipment demonstrations and hands-on workshops.	Feb 13-15	Charlotte, NC
	Oct 9-11	Richmond, VA

Topics:

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

Course 1400 : Valve Trim and Body Maintenance	Date	Location
Explains how valves and actuators function and how they are installed and calibrated. Emphasizes installation, troubleshooting, parts replacement, and calibration of control valves, actuators, and digital valve controllers.	April 24-26	Richmond, VA
	Oct 2-4	Charlotte, NC

Topics:

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

Course 1450 : Valve Technician II	Date	Location
This course uses a very hands-on approach for troubleshooting and correcting many common control valve problems. The class will be introduced to the practice of basic valve sizing and selection. Valve problems such as cavitation, flashing, and aerodynamic noise are also discussed as well as common solutions to these problems using different Control Valve trims and materials.	May 15-17	Charlotte, NC
	TBD	Richmond, VA

Topics:

- Control Loop Basics
- Influences on Loop Performance
- Control Valve Selection and Sizing
- Valve Troubleshooting
- Actuator Troubleshooting
- Instrument Selection
- Basic Instrument Troubleshooting
- Severe Service Consideration

2018 Training Schedule

Course 1759 : Diagnostic Data Interpretation Using ValveLink Software for FIELDVUE	Date	Location
This 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 parameters. Comparison tests on valves/actuators containing assembly or operating flaws will be performed and the data will be used for troubleshooting purposes.	July 10-12	Charlotte, NC
	TBD	Richmond, VA

Topics:

- Review of ValveLink Diagnostic Tests
- Data Interpretation
- Troubleshooting Techniques
- Comparison Testing Techniques
- Performance Diagnostics

Course 2003 : AMS Machinery Manager Database Optimization Workshop	Date	Location
This course will instruct experienced users on database optimization techniques using an existing database and enhancing it by calculating and implementing improved Analysis Parameter (AP) sets. Students will learn how to identify when an AP set needs to be adjusted and how to make the adjustments effectively.	April 24-27	Charlotte, NC
	TBD	Richmond, VA

Topics:

- Understanding the Database
- Managing Invalid Data
- Analysis Parameter Set Review
- Electric Motor Points
- Manual Alarm Adjustment
- AutoStat Alarm Adjustment
- Warning Alarms

Course 2025C : Wireless Self Organizing Network & AMS 9420 Operation and Maintenance	Date	Location
This is a combination of courses 2025 & 2375. Course 2025 uses lectures and labs to maximize the hands on training. Course 2375 explains how Self Organizing Wireless Networks function and how they are installed, setup, configured and integrated.	Nov 6-8	Charlotte, NC
	TBD	Richmond, VA

Topics:

- Overview of CSI 9420 Hardware Components
- Vibration Basics and Terminology Relating to CSI 9420
- Import Data into AMS Machinery Manager
- View Data Using AMS Machinery
- Troubleshooting and Maintenance

Course 2031 : Basic Vibration Analysis/Category 1 Compliant	Date	Location
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. Complies with Category 1 Vibration Analyst per ISO standard 18436-2. Exam 2021EX will be Friday, February 2nd.	TBD	Charlotte, NC
	TBD	Richmond, VA

Topics:

- Principles of Vibration
- Acquisition & Signal Processing
- Condition Monitoring & Corrective Action
- Equipment Knowledge
- Acceptance Testing
- Basic Analyzer Function

Course 2032 : Intermediate Vibration Analysis	Date	Location
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. *[See topics on next page]*	March 20-23	Charlotte, NC
	TBD	Richmond, VA

Topics: Recognition of Machine Defects Including

- Reference Standards
- Imbalance
- Misalignment
- Bent Shaft
- Belts – Gear Boxes
- Soft Shaft
- Antifriction and Journal Bearings
- Looseness
- Resonance
- Electrical Defects

Course 2033 : Advanced Vibration Analysis	Date	Location
This 4-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 Machinery Manager Software to set up the advanced analyzer features and the powerful download-able 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. Exam 2023EX will be Friday, October 19. Students will receive a complimentary copy of the Simplified Handbook of Vibration Analysis, Volume I, by Art Crawford.	Oct 15-18 Exam Oct 19	Charlotte, NC

Topics:

- Specify Appropriate Vibration Instrumentation Hardware 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 & Analyze Basic Operational Deflection Shapes (ODS)
- Measure and Analyze PeakVue Measurements
- Slow Speed Technology (SST)

Course 2068 : Introduction to AMS Machinery Management	Date	Location
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.	Sept 25-28	Charlotte, NC

Topics:

- RBM Wizard
- Database Setup
- Route Management
- Reports
- Vibration Analysis Module

Course 7009 : DeltaV Implementation I	Date	Location
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.	April 16-20 Aug 13-17	Charlotte, NC Richmond, VA

Topics:

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

2018 Training Schedule

Course 7016 : Systems Batch Implementation	Date	Location
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. This course includes access to a virtual DeltaV system to practice and review course workshops complete with brief recorded demonstrations available after course completion.	March 19-23	Charlotte, NC
	TBD	Richmond, VA

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

Course 7017 : DeltaV Implementation II	Date	Location
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.	May 7-11	Richmond, VA
	TBD	Charlotte, NC

Topics:

- Function Block Structures Status Values
- Analog Control Palette Blocks PID Basis/Gain, Dead time, 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

Course 7018 : DeltaV Hardware & Troubleshooting	Date	Location
This course provides an overview of the DeltaV Control Network, M- and S-series hardware, and software applications. This 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, Student will learn how to use operator and diagnostic tools to identify and locate hardware-related fault conditions.	Feb 6-9	Charlotte, NC
	June 19-22	Richmond, VA

Topics:

- DeltaV Overview
- Operator Alarms
- DeltaV Diagnostics
- DeltaV Smart Switches
- DeltaV I/O Cards and Carriers
- Controllers and Power Supplies
- Electronic Marshalling
- HART I/O
- DeltaV and AMS Suite Intelligent Device Manager

Course 7025 : DeltaV Advanced Graphics	Date	Location
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.	Aug 13-17	Charlotte, NC
	TBD	Richmond, VA

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

2018 Training Schedule

Course 7026 : DeltaV Cybersecurity	Date	Location
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.	Aug 20-24	Richmond, VA
	TBD	Charlotte, NC

Topics:

- DeltaV Deployment Guidelines & Physical Security
- DeltaV Area Control Network
- Communications Security & Remote Access to DeltaV
- Active Directory Design & User Account Management
- Device Hardening & Event Logging
- Appliance
- Software Patching
- Backup & Recovery

Course 7027 : Administration Windows 7/Server 2008	Date	Location
Designed for control system administrators, process control engineers, and IT specialists responsible for managing, installing, and commissioning a DeltaV system on Windows 10 and Server 2016 operating systems.	June 11-15	Richmond, VA

Topics:

- Overview of System Components and Topologies
- DeltaV Installation
- DeltaV License
- Importing/Exporting Configuration
- Firmware Upgrades
- User Administration
- DeltaV Security Administration
- Configuration Database Administration
- Continuous Historian Administration

Course 7029 : DeltaV Virtualization	Date	Location
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.	Sept 17-21	Richmond, VA

Topics:

- Virtualization Primer
- Overview of DeltaV Virtualization Solutions
- Planning a DeltaV Virtual Studio System
- Cluster Health Monitoring & Troubleshooting
- Creating DeltaV Virtual Machines
- Configuring a WYSE Thin Client
- Create a Highly Available Fall over Cluster
- Upgrading and Capacity Expansion

Course 7305 : DeltaV – SIS Implementation	Date	Location
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.	Aug 6-10	Richmond, VA

Topics:

- DeltaV SIS Overview
- SLS 1508 Hardware Architecture
- 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

2018 Training Schedule

Course 9025 : Control Loop Foundation	Date	Location
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 work with and commission single and multi-loop control strategies. Interactive workshops allow the student to apply what they learn in the class.	March 5-9	Richmond, VA
	June 25-29	Charlotte, NC

Topics:

- Background-Historic Perspective
- Measurement-Basic Transmitter Types, Limitations
- Analyzers-Examples of On-Line
- Final Elements-Valves and Variable Speed Drives
- Field Wiring and Communications
- Control Strategy Documentation
- Operator Graphics and Metrics
- Process Characterization
- Control Objectives
- Single Loop Control

Course 9032 : Entech Applied Modern Loop Tuning	Date	Location
Introduces participants to effective methods for determining optimal tuning parameters for regulation of processes. The non-oscillatory EnTech tuning techniques, based on Lambda tuning concepts, are taught with a focus on minimizing process variability. Effectiveness is gained by the implementation of a tuning strategy that matches control loop dynamics to process operating requirements. It contains formal lectures that are amply populated with process examples and supported with hands-on lab exercises using high-fidelity process simulator software. Participants learn how to recognize acceptable versus unacceptable control loop performance and to identify the most common source of problems. Fundamental tuning concepts, including the PID controller, process dynamics, valve motion characteristics deadband (backlash) and resolution (stick/slip), setpoint tracking and regulatory control, integrating processes, and level control are reviewed and demonstrated using case study examples.	April 10-12	Richmond, VA
	July 31-Aug 2	Charlotte, NC

Topics:

- Process Dynamics/Model Identification
- Self-Regulating and Valve Non-linearity
- Control Resolution
- Operator Graphics and Metrics
- Pressure for Load Recovery and Setpoint Response
- Process Interactions
- Tuning Interactions, Cascade Control Tuning
- High-Fidelity Process Simulator Software

Course REM410 : Steam Boiler Operator Training	Date	Location
Provides information on virtually all facets of steam boiler operation, maintenance, and troubleshooting. Common boiler auxiliaries and operating techniques are covered in detail. Safety of operation are stressed.	March 12-16	Richmond, VA
	June 4-8	Charlotte, NC

Topics:

- Boiler Operator Workbook – Fourth Edition included
- Licensing/Certification

Course REL004 : Planning & Scheduling Principles - Introduction	Date	Location
This introductory course will help you understand the fundamentals of creating and maintaining an efficient planning and scheduling program for reliability centered maintenance (RCM)	June 19-20	Charlotte, NC

Topics:

- Planning and Scheduling World Class Model
- Planning Principles
- Scheduling Principles
- Planning and Scheduling Program Monitoring
- Successful Implementation of the Planning and Scheduling Model
- Quality Program Performance Measures

2018 Training Schedule

3 Day Machinery Lubrication Training	Date	Location
This training is designed to give you the theory and practical tools needed to transform lubrication programs. By using "how to" guides you'll complete the course knowing why and how key changes should be implemented.	March 20-22	Charlotte, NC

Topics:

DAY 1:

- Role of lubrication in machine reliability
- Lubrication theory and fundamentals
- Lubricates failure modes

DAY 2:

- Grease application methods
- Lubricant selection and lubrication consideration
- Lubricant contamination control

DAY 3:

- Storage and handling of lubricants
- Used oil analysis
- Oil sampling methods
- Equipment modifications
- Lubrication program gap analysis