

EDUCATIONAL SERVICES

TRAINING COURSE CATALOGUE
ASSET OPTIMIZATION AND PROCESS CONTROL
MIDDLE EAST & AFRICA




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Process Management

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PlantWeb® /DeltaV™ Introduction (Course 7101) CEUs: 2.1

Students who complete this 3-day course will be able to:

- ▶ Use and apply PlantWeb terminology and acronyms
- ▶ Understand the functions of DeltaV hardware components
- ▶ Understand the capabilities of DeltaV software applications
- ▶ Understand the Foundation™ fieldbus technology
- ▶ Understand AMS Device Manager software
- ▶ Understand OPC

Perform basic workstation operations including accessing displays, interpreting faceplates and accessing modules to make process changes, responding to alarms and observing/changing tunable configuration parameters.

Prerequisites:

None.

Topics to be covered:

- ▶ DeltaV System Description
- ▶ Analog Control Modules
- ▶ Discrete Control Modules
- ▶ FOUNDATION™ fieldbus
- ▶ AMS Device Manager
- ▶ OPC

AMS Device Manager M1 & M2 (Course 7020) CEUs: 2.1

Completing 2-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. The training exercises focus on skills required by engineers and technicians, and are based on real-world tasks that most users will encounter on the job.

Prerequisites:

None.

Topics to be covered:

7020-1 Configuring and Using AMS Device Manager

- ▶ Viewing and Modifying Devices
- ▶ Creating a Plant Database Hierarchy and Adding Devices
- ▶ Using the 375 Field Communicator with AMS Device Manager
- ▶ Using the AMS Device Manager Browser Functions
- ▶ Audit Trail
- ▶ Calibrating Device - Calibration Assistant
- ▶ Configuring and Monitoring System Alerts

7020-2 System Administration

- ▶ AMS Device Manager System Overview
- ▶ Installing an AMS Device Manager Server Plus Standalone
- ▶ Starting AMS Device Manager for the First Time
- ▶ Network Communication Interface Setup
- ▶ AMS Device Manager Database Management
- ▶ Installing a Distributed System
- ▶ Installing Device Types from Media

Paths to Success - Machinery Health™ Management

Pick the curriculum of your choice or let us help guide your technicians on a path to certification.
All training uses the latest equipment.

Choose and Complete Your Machinery Health Training Path to Success

Category I Vibration Analyst Path	Category II Vibration Analyst Path	Category III Vibration Analyst Path	Lubrication Analyst Path	Online Monitoring Path	Reliability Management Path	Complementary PdM Technology
Course 2069 Fundamentals of Vibration Analysis	Course 2074 Intermediate AMS Machinery Manager	Course 2070 Advanced AMS Machinery Manager	Course 2082 Lubrication Level 1 and Level 2 with Certification Exam	Course 2088 On-line Prediction Operation and Maintenance	Course 2093 Maintenance Best Practices	Course 2015 Balancing Theory and Applications with CSI 2130
Course 2072 Fundamentals of CSI 2130	Course 2032 Intermediate Vibration Analysis	Course 2033 Advanced Vibration Analysis	Course 2084 Wear Debris Analysis Workshop	Course 2080 On-line Protection Operation and Maintenance	Course 2053 Root Cause Failure Analysis	Course 2092 Laser Alignment with CSI 2130
Course 2068 Introduction to AMS Machinery Manager	Course 2022EX Category II Exam	Course 2023EX Category III Exam	Course 2083 Oilview for AMS Machinery Manager	Course 2089 Turbo Machinery Diagnostic		Course 2067 Basic Ultrasonic Theory and Techniques
Course 2031 Basic Vibration Analysis	Optional course highly recommended Course 2091 CSI 2130 Advanced Functions	Optional course highly recommended Course 2035 and 2075 PeakVue® Mystery and Autocorrelation				Course 2019 IR Thermography Level 1
Course 2021EX Category I Exam						Course 2018 IR Analysis for AMS Machinery Manager
						Course 2081 Electric Motor Diagnostics and Basic Motorview

Category I Vibration Analyst Path

Introduces students with no prior experience in vibration monitoring and analysis to the theories of vibration data and basic operation of the CSI 2130 Machinery Health® Analyzer and AMS® Suite: Machinery Health Manager.

Category II Vibration Analyst Path

For experienced students who are familiar with vibration data collection and want to advance their knowledge and ability to diagnose machinery issues.

Category III Analyst Path

Teaches students the advanced power of PeakVue and root causes of machine problems.

Lubrication Analyst Path

Explores lubrication analysis and its importance to a complete reliability program. Lubrication analysis is often the easiest way to diagnose common machine problems.

Online Monitoring Path

For students with the CSI 4500, XP32, CSI 6500 or CSI 6000 systems. Explore the benefits of continuous monitoring of critical machinery and how to integrate with operational plant control architecture.

Complementary PdM Technology

Instruction rounds out a full reliability program with Infrared Thermography, Ultrasonic, Balancing, Alignment and Electric Motor Diagnostic courses.

Basic Vibration Analysis/Category I Compliant (Course# 2031) CEUs: 2.8

This 4-days course complies with **Category I Vibration Analyst per ISO standard 18436-2:** Vibration condition monitoring and diagnostics.

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.

Prerequisites:

Fundamentals of vibration analysis course or a cumulative six months of field experience is recommended.

Topics to be covered:

- | | |
|--|---|
| <ul style="list-style-type: none"> ▶ Principles of Vibration ▶ Data acquisition & Signal processing ▶ Condition monitoring & Corrective action ▶ Equipment knowledge ▶ Acceptance testing ▶ Basic analyzer functions ▶ The class shows students how to recognize machine defects such as: | <ul style="list-style-type: none"> • Unbalance • Shaft misalignment • Looseness • Rolling element bearing defects • Gear problems • Resonance • Introduction to electrical defects |
|--|---|

ISO Compliant Vibration Certification Exam

Course# 2021EX: Category I exam, available at the end of course# 2031

Test Format: Written exam, Duration: 2 hours, Passing Grade: 75%

Intermediate Vibration Analysis/Category II Compliant (Course# 2032) CEUs: 2.8

This 4-days 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 recommend minor corrective actions.

Prerequisites:

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

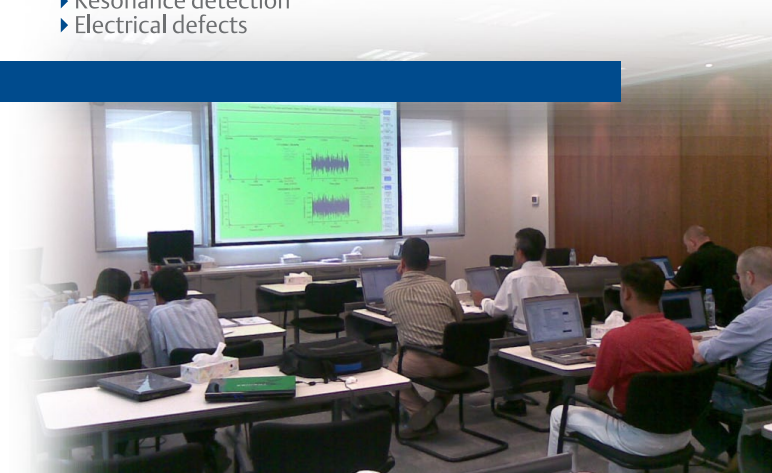
Topics to be covered:

- | | |
|---|--|
| <ul style="list-style-type: none"> ▶ Effects of Amplitude and Phase ▶ Phase analysis using single and dual channel ▶ Analyzer averaging techniques ▶ Digital Signal Processing ▶ PeakVue signal processing ▶ Advanced waveform analysis ▶ Fault severity determination | <ul style="list-style-type: none"> ▶ Unbalance ▶ Perform basic single-plane field balancing ▶ Misalignment ▶ Looseness ▶ Rolling element bearing failure modes ▶ Resonance detection ▶ Electrical defects |
|---|--|

ISO Compliant Vibration Certification Exam

Course# 2022EX: Category II exam, available at the end of course# 2032

Test Format: Written exam, Duration: 3 hours, Passing Grade: 75%



Advanced Vibration Analysis/Category III Compliant (Course# 2033) CEUs: 2.8

This 4-days 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 Health Manager Software to set up the advanced analyzer features. 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 to be covered:

- ▶ 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® measurements
- ▶ Prepare and submit machinery condition reports
- ▶ Provide instruction and technical direction to vibration trainees
- ▶ Understanding Phase
- ▶ Slow Speed Technology (SST®)
- ▶ Zoom Analysis
- ▶ Transient Techniques
- ▶ Dual Channel Machinery Analyzer Features
- ▶ Triggered Data Capture
- ▶ Simplified Modal Testing
- ▶ Resonance Detection

ISO Compliant Vibration Certification Exam

Course# 2023EX: Category III exam, available at the end of course# 2033

Test Format: Written exam, Duration: 4 hours, Passing Grade: 75%

PeakVue® Mystery (Course# 2035) CEUs: 1.4

This 2-days course provides insight into advanced functionality of Emerson's patented PeakVue technology. 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.

This course makes use of both case studies from real-life examples of common faults and live demonstrations illustrating specific mounting procedures to reliably detect certain faults.

Prerequisites:

Students should be familiar with vibration data collection and analysis techniques and the use of AMS Machinery Manager Software.

Topics to be covered:

- ▶ Proper PeakVue set-up for all speeds
- ▶ Sensor selection and sensor mounting
- ▶ Setting alarm levels and choosing trend parameters
- ▶ Analyzing PeakVue spectra and waveforms
- ▶ Uses of the circular waveform plot
- ▶ Introduce the autocorrelation coefficient
- ▶ Demonstrate the use of the autocorrelation coefficient data as a diagnostic tool to support the spectra data for vibration analysis through several case studies

Introduction to AMS Machinery Manager & Fundamentals of CSI 2130

(Course# 2068 & 2072) CEUs: 2.8

This 4-days course was designed for the new users of AMS Machinery Manager. 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. This hands on course focuses on the basic operation of the CSI 2130 Machinery Health Analyzer to load routes and collect data on lab machinery for some basic vibration analysis using Vibration Analysis module.

Prerequisites:

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

Topics to be covered:

- ▶ Navigation
- ▶ Database creation
- ▶ Data collection
- ▶ Analyzer/computer communication
- ▶ Predefined route data collection
- ▶ Off-route data collection and setup
- ▶ Monitor mode measurements
- ▶ Basic analysis and reporting
- ▶ Link to RBMview

Intermediate AMS Machinery Manager

(Course# 2074) CEUs: 2.1

This 3-days course teaches some of the more advanced machinery analysis techniques available in AMS Suite Machinery Health Manager Software. This course focuses more on analysis and reporting with the use of Vibration Analysis module, PeakVue and full version of RBMview.

Prerequisites:

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

Topics to be covered:

- ▶ Vibration Analysis module
- ▶ PeakVue
- ▶ Exception reporting
- ▶ RBMview
- ▶ Nspectr Basics
- ▶ Data Transfer



Advanced AMS Machinery Manager (Course# 2070) CEUs: 2.1

This 3-days course is the third in our series of AMS Machinery Manager courses. Hands-on practice includes the creation of a class database with example machines and collection of vibration data used for problem analysis and reporting. Participants learn to use the advanced analysis and reporting functions of AMS Machinery Manager.

Prerequisites:

Intermediate AMS Machinery Health Manager (course # 2074). Intermediate Vibration (course #2032) or one year vibration analysis experience are recommended.

Topics to be covered:

- ▶ Problem reporting
- ▶ Status-at-a-Glance operation and reporting
- ▶ Nspectr[®]
- ▶ Wizard - reporting techniques and modification/addition of setup information
- ▶ Austostat
- ▶ DButly
- ▶ DBZip
- ▶ NetAdmin
- ▶ Data Locker Management

CSI 2130 Advanced Functions (Course# 2091) CEUs: 1.4

This 2-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 to be covered:

- ▶ PeakVue Analysis
- ▶ Resonance Detection
- ▶ Dual 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

Lubrication Level I (Course# 2082A) CEUs: 1.4

This 2-days course is designed for individuals who have limited or no oil analysis experience. Guidelines and instruction for starting an oil analysis program will be provided. 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.

Prerequisites:

None

Topics to be covered:

- ▶ The productive lubricant analysis program
- ▶ Analyzing oil data
- ▶ Identifying common types of wear debris, their origins, and corrective actions
- ▶ The importance of contamination control
- ▶ Designing sampling, storage and handling procedures

Optional Level I Lubrication Certification—no charge

Balancing Application with CSI 2130 (Course# 2015) CEUs: 1.4

This 2-days class on Balancing Applications with CSI 2130 teaches how to perform single- and dual-plane balancing using analyzer-based balancing methods. The class uses the CSI 2130 Machinery Health Analyzer on lab machinery.

Prerequisites:

Understanding of vibration analysis is recommended

Topics to be covered:

- ▶ 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



On-line Protection, Operation and Maintenance (Course# 2080) CEUs: 1.4

This 2-days course is a hands-on training for anyone involved with operating and maintaining a CSI 6000/6500 System. Workshops include practice with “live” monitors and racks.

Topics to be covered:

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

On-line Prediction, Operation and Maintenance (Course# 2088) CEUs: 2.8

This 4-days course is best suited for those who have a CSI 4500, CSI 6500 or CSI XP32 system installed and operational prior to attending the course.

The course is designed for:

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

Prerequisites:

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

Topics to be covered:

- ▶ Vibration basics and terminology
- ▶ System overview: functionality and system components
- ▶ Online Watch - used to monitor the system daily
- ▶ Online Configuration - adding a new machine to an existing database
- ▶ Vibration Analysis Module - spectrums, waveforms and trend data
- ▶ PeakVue® Processing
- ▶ Transient setup and capture evaluation
- ▶ Review of customer databases

Learning Path - Automation Systems

Plant Operators /Managers / Supervisors

These courses are for individuals needing an introduction to the technology and concepts used in new generation of process control systems for Operators responsible for the operation of continuous processes using DeltaV system, Project Managers, Supervisors and teams members who provide supporting roles on DeltaV Automation System and Safety Instrumented System Project.

- | | | |
|---|-------------|-----------|
| ▶ PlantWeb® /DeltaV™ Introduction | Course 7101 | CEUs: 2.1 |
| ▶ DeltaV Operator Interface for Cont. Control | Course 7012 | CEUs: 1.4 |
| ▶ DeltaV™ SIS Overview | Course 7301 | CEUs: 2.1 |

Maintenance Engineers & Technicians

This course is recommended for instrumentation and maintenance technicians and their managers, and for configuration engineers prior to taking configuration classes. It provides an overview of the DeltaV Control Network, hardware, and software applications. Upon completion, you will be able to describe the hardware and perform troubleshooting techniques for the DeltaV Control Network, Controllers, I/O subsystem, and workstation. The individuals responsible for installing, troubleshooting, calibrating and configuring Foundation fieldbus instruments and control strategies using the DeltaV scalable systems, provides the quickest route to your productive use of this predictive maintenance application. The training exercises focus on skills required by engineers and technicians, and are based on real-world tasks that most users will encounter on day to day activities.

- | | | |
|-------------------------------------|-------------|-----------|
| ▶ DeltaV Hardware & Troubleshooting | Course 7018 | CEUs: 2.8 |
| ▶ Fieldbus Systems and Devices | Course 7032 | CEUs: 3.2 |
| ▶ AMS Device Manager | Course 7020 | CEUs: 2.1 |

Engineering / Configuration Engineers

These courses are for individuals responsible for configuring and commissioning a DeltaV System, responsible for interfacing with DeviceNet, AS-I Profibus DP HART and serial communication busses to a DeltaV™ Scalable system.

- | | | |
|---|-------------|-----------|
| ▶ DeltaV Implementation I | Course 7009 | CEUs: 3.2 |
| ▶ DeltaV Implementation II | Course 7017 | CEUs: 3.2 |
| ▶ Communication Bus Interfaces with the DeltaV System | Course 7037 | CEUs: 2.1 |
| ▶ DeltaV Advanced Control | Course 7201 | CEUs: 3.2 |

Engineers & System Administrators

These courses are for system administrators that will be installing, commissioning and implementing a DeltaV system running on the XP Operating system and Windows Server Operating system.

- | | | |
|---|-------------|-----------|
| ▶ DeltaV Systems Administration - XP/Server 2003 | Course 7024 | CEUs: 3.2 |
| ▶ DeltaV Systems Administration - Windows 7/Server 2008 | Course 7027 | CEUs: 3.2 |

Safety Instrumented Systems

These courses are for individuals responsible for maintaining a DeltaV SIS, personnel who design, implement, commission and service DeltaV SIS.

- | | | |
|--|-------------|-----------|
| ▶ DeltaV™ Safety Instrumented System (SIS) Maintenance | Course 7303 | CEUs: 2.1 |
| ▶ DeltaV™ SIS Implementation | Course 7305 | CEUs: 3.2 |

DeltaV Operator Interface for Cont. Control (Course 7012) CEUs: 1.4

This 2-day course uses lectures and hands-on workshops to provide an in-depth overview on operating the DeltaV System. Students who complete this course will:

- ▶ Access operator displays
- ▶ Manipulate various control module operating parameters to operate the process
- ▶ Respond to process alarms
- ▶ Monitor process performance
- ▶ View real-time and historical trend data

Topics to be covered:

- ▶ System Overview
- ▶ Accessing DeltaV Operate Window, Menu Displays and Directories
- ▶ Discrete and Analog Control Module Operation
- ▶ Accessing Alarm Displays/Alarm Handling
- ▶ Motor Control Module Operation
- ▶ Regulatory/Cascade Control Module Operation
- ▶ Accessing Real-time/Historical Trend Data
- ▶ Unit Alarms
- ▶ Sequential Function Chart Operation
- ▶ Phase Logic Modules

DeltaV™ SIS Overview (Course 7301) CEUs: 2.1

This 3-day course is a hands-on instructor led course. The course covers the safe, efficient, and reliable architecture of a smart SIS including Rosemount SIS instruments, DeltaV SIS and Fisher SIS Digital Valve Controllers. Students will gain a working knowledge in Safety Instrumented Function (SIF) design, implementation, and operations.

Topics to be covered:

- ▶ SIS Terminology
- ▶ The Safety Lifecycle
- ▶ SIL Levels
- ▶ DeltaV SIS Hardware Architecture
- ▶ DeltaV SIS Software Architecture
- ▶ Rosemount SIS Instruments
- ▶ Fisher SIS Digital Valve Controllers
- ▶ DeltaV SIS Operations



DeltaV Hardware & Troubleshooting (Course 7018) CEUs: 2.8

This 4-day course focuses on the hardware components that make up the DeltaV system. Using a combination of lectures and workshops, you will assemble the system and power up the Controller, I/O subsystem, and workstation. You will learn how to use the diagnostic tools available to verify and locate hardware-related fault conditions, and you will be introduced to configuration tools and the operator interface. If your systems include bus technologies, we recommend courses 7030, 7032, or 7037. The 7018 course satisfies the prerequisite requirement for these bus courses.

Prerequisites:

Windows experience

Topics to be covered:

- ▶ DeltaV Overview
- ▶ Controllers
- ▶ I/O Cards
- ▶ Carriers
- ▶ Field Power
- ▶ System Power Supplies
- ▶ Control Network
- ▶ Workstation
- ▶ Diagnostics
- ▶ Troubleshooting
- ▶ DeltaV Operate Overview
- ▶ Interpreting the Event Journal, Trend Charts and Alarm List
- ▶ Introduction to HART Devices and AMS
- ▶ Intelligent Device Manager

Fieldbus Systems and Devices (Course 7032) CEUs: 3.2

This 4-1/2 day lecture/lab provides maximum hands-on experience working with the integration of FOUNDATION™ fieldbus devices and the DeltaV scaleable system. The student will be able to install fieldbus instruments and segment checkout for the correct operation of the physical layer. The student will be able to use the DeltaV system to perform AMS Device Manger methods such as calibration, setup wizards, zero trim and diagnostics. The student will be able to implement a pressure loop using FOUNDATION™ fieldbus function blocks with the DeltaV Control Studio application. The student will configure PlantWeb Alerts and device alarm parameters.

Prerequisites:

Course 7009 or Course 7018

Topics to be covered:

- ▶ FOUNDATION™ fieldbus Overview
- ▶ Macro Cycle Execution
- ▶ Fieldbus Function Blocks
- ▶ Control Strategy Configuration
- ▶ Control Anywhere
- ▶ FieldVue Theory of Operation
- ▶ Transmitter Theory of Operation
- ▶ AMS Device Manager Methods
- ▶ Fieldbus Wiring Practices
- ▶ System Troubleshooting
- ▶ Configuring Fieldbus Device
- ▶ Alarms and PlantWeb Alerts
- ▶ Configuring a Fieldbus Operator Display
- ▶ Segment Checkout Procedures

DeltaV Implementation I (Course 7009) CEUs: 3.2

This 4-1/2 day course covers a complete DeltaV system implementation. Upon completion of this course the student will be able to define system capabilities, define nodes, configure continuous and sequential control strategies, operate the system and define users and security.

Prerequisites:

Windows experience. It is recommended that prospective attendees new to process control systems attend Course 7101 or Course 7018.

Topics to be covered:

- ▶ System Overview
- ▶ Explorer
- ▶ Control Modules
- ▶ Control Studio
- ▶ Motor Control
- ▶ Regulatory Control
- ▶ WorkSpace
- ▶ System Operation
- ▶ Alarms & Process History View
- ▶ Sequential Function Charts
- ▶ Phase Logic
- ▶ Security

DeltaV Implementation II (Course 7017) CEUs: 3.2

This 4-1/2 day course is for process control engineers responsible for configuring the DeltaV system. Advanced topics will be covered including displays, function blocks, and configuration tips.

Prerequisites:

Course 7009, DeltaV Implementation I

Topics to be covered:

- ▶ Function Block Structure
- ▶ HART Inputs and Outputs
- ▶ Analog Control Blocks
- ▶ DeltaV Tune with InSight
- ▶ Device Control Options
- ▶ Class Based Control Modules
- ▶ Expressions
- ▶ Unit Alarms
- ▶ Multi-Dimensional (Array Parameter)
- ▶ Equipment Modules
- ▶ Display Environment
- ▶ Custom Faceplates
- ▶ Custom Dynamos



Communication Bus Interfaces with the DeltaV System (Course 7037) CEUs: 2.1

This 3-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 and HART devices, including proper wiring practices. The AMS Intelligent Device Manager will be used to configure HART instruments.

Prerequisites:

Course 7009, DeltaV Implementation or Course 7018, DeltaV Hardware and Troubleshooting. The 375 Field Communicator will be available for the students.

Topics to be covered:

- ▶ HART Overview
- ▶ Configuring DeltaV Control Module with HART
- ▶ Configuring HART Device with AMS Intelligent Device Manager and/or Rosemount 375 Handheld Communicator
- ▶ Serial Interface Overview
- ▶ Configuring DeltaV and Serial Interface Card
- ▶ Actuator Sensor Interface (AS-i) Overview
- ▶ AS-i: Wiring and Installation
- ▶ Assembling and Configuring AS-i Network with DeltaV
- ▶ Profibus DP Overview
- ▶ Topologies: Wiring and Installation
- ▶ Assembling and Configuring Profibus DP Network with DeltaV
- ▶ DeviceNet Overview
- ▶ DeviceNet: Wiring and Installation
- ▶ Assembling and Configuring DeviceNet with DeltaV

DeltaV Advanced Control (Course 7201) CEUs: 3.2

This 4-1/2 day course introduces students to the advanced control tools available within DeltaV and how they may be used to improve plant operations.

Prerequisites:

Courses 7101, PlantWeb/DeltaV Intro. or 7009, DeltaV Implementation I or equivalent field experience.

Topics to be covered:

- ▶ 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
 - Tuning Response
 - Process Learning
 - Adaptive Tuning
 - Adaptive Control
- ▶ DeltaV Fuzzy
 - Principles of 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

DeltaV Systems Administration - XP/Server 2003 (Course 7024) CEUs: 3.2

This course is designed for system administrators that will be installing, commissioning and implementing a DeltaV system running on the XP operating system and Windows Server 2003. The course is 4-1/2 days in length.

Prerequisites:

Course 7009, DeltaV Implementation I, or Course 7018, DeltaV Hardware and Troubleshooting.

Topics to be covered:

- ▶ Overview/Review of System Components and Topologies
- ▶ Installation Checklist of the XP Operating System
- ▶ Installation of the DeltaV Software Components
- ▶ DeltaV Control Networks
- ▶ DeltaV Domains and Workgroups
- ▶ Users and Securities
- ▶ Upgrading Hardware and Software
- ▶ Backup and Restore Procedures
- ▶ Importing/Exporting
- ▶ Process Historian Administration
- ▶ DeltaV Zones

DeltaV Systems Administration - Windows 7/Server 2008 (Course 7027) CEUs: 3.2

This 4-1/2 day course is designed for system engineers and administrators responsible for installing, commissioning, and managing a DeltaV system running on the Windows 7 operating system and Windows Server 2008.

Prerequisites:

Course 7009, DeltaV Implementation I, or Course 7018, DeltaV Hardware and Troubleshooting.

Topics to be covered:

- ▶ Overview/Review of System Components and Topologies
- ▶ Installation Checklist of the Windows 7 and Windows Server 2008 Operating Systems
- ▶ Installation of the DeltaV Software Components
- ▶ DeltaV Control Networks and Remote Access
- ▶ DeltaV Domains and Workgroups
- ▶ User Administration and Network Security
- ▶ Upgrading Hardware and Software
- ▶ Backup and Restore Procedures
- ▶ Importing/Exporting
- ▶ DeltaV Zones



DeltaV™ Safety Instrumented System (SIS) Maintenance (Course 7303) CEUs: 2.1

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 to be covered:

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

DeltaV™ SIS Implementation (Course 7305) CEUs: 3.2

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.

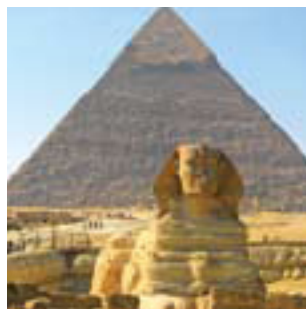
Prerequisites:

Course 7009 is a requirement. Recommend IEC 61511 knowledge (Course BSE101 or BSE201).

Topics to be covered:

- ▶ DeltaV SIS Fisher SIS Digital Valve Controllers
- ▶ The Safety Lifecycle Safety Standards
- ▶ DeltaV SIS Hardware Design Document Requirements
- ▶ DeltaV Safety Instrumented Functions
- ▶ DeltaV SIS Security
- ▶ Rosemount SIS Instruments Security
- ▶ DeltaV Version Control

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