Grow knowledge and competency through experience with operator training.

DeltaV™ Operator Training Solutions
Operator training designed to help ensure project certainty.
In a project environment where complexity, costs, and change can reduce the certainty of success, you have the power to overcome these challenges. Make training, knowledge transfer, and competency part of the answer.

Skilled personnel solve complex problems, anticipate and eliminate additional costs, as well as accommodate changes so operations run smoothly and consistently.

Drive operational excellence in your facility by fostering the development of talent in your personnel.

LIFECYCLE DYNAMIC SIMULATION

Lifecycle Dynamic Simulation is a key offering focused on Operator Performance.
## DeltaV™ Operator Training Solutions Overview

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**DeltaV OTS Turnkey Solution**

**Lifecycle Dynamic Simulation**
DELTAV – OPERATOR TRAINING FOR CONTINUOUS OPERATION

Overview
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
- System Overview
- Accessing DeltaV Operate Window, Menus Displays and Directories
- Discrete and Analog Control Module Operation
- Accessing Alarm Display/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 – OPERATOR TRAINING FOR BATCH OPERATION

Overview
This 2-1/2 day course uses lectures and hands-on workshops to provide an in-depth overview on operating the DeltaV System. It includes all content in the continuous operation course plus students will:

- Understand basic batch terminology
- Manipulate Unit Module parameters
- Access the Batch Operator Interface
- Run procedures
- Review batch history data topic

Topics
- System Overview
- Accessing DeltaV Operate Window, Menus Displays and Directories
- Discrete, Analog, Regulatory and Cascade Control Module Operation
- Motor Control Module Operation
- Accessing Alarm Displays/Alarm Handling
- Accessing Real-time/Historical Trend Data
- Accessing Process History View
- Sequential Function Chart Operation
- Phase and Recipe Controls
- Batch Operator Interface
- Batch Historian
- Campaign Manager
OPERATOR TRAINING DESIGNED TO HELP ENSURE PROJECT CERTAINTY

The DeltaV™ Essential Operator Training Solution is an affordable and effective training program for your operations personnel. It is a flexible solution that can optionally provide years of training for your workforce via the cloud, without the prohibitive costs of maintaining a training system. DeltaV Essential Operator Training Solution includes instructional materials, customized student curriculum, and workshops all customized to your specific graphics and module types. Student workshops include low fidelity tie-back simulation to demonstrate module functionality and perform workshops.

DeltaV Essential Operator Training Solution is available in the traditional classroom environment with live instructors and equipment, or in the virtual classroom environment with live online instruction and DeltaV distributed control systems (DCS), as well as a new blended learning environment that uses state-of-the-art technologies to host training in the cloud.

VIRTUAL CLASSROOM ENVIRONMENT (OPTION 2)

The Virtual Classroom option includes one scheduled course conducted by a certified Emerson Educational Services instructor live via the internet, with connection to DeltaV DCS equipment for up to 12 students. An option to increase the number of students is available.

BLENDED LEARNING ENVIRONMENT (OPTION 3)

The Blended Learning option includes recorded instruction and demonstrations by a certified Emerson Educational Services instructor. A dedicated DeltaV system is provided for to up to 25 students and via the cloud. The instruction, demonstrations and DeltaV systems are available 24x7 to each student for period of 12 months after activation. An option to increase the number of students, and expanded length of access to sessions and DeltaV workstations, is available.
COURSE LENGTH: 2 DAYS FOR CONTINUOUS PROCESSES; 2.5 DAYS FOR BATCH PROCESSES

- Fixed Price and Scope (with options available)
- Development Time Required: 6 Weeks for Continuous Processes / 10 Weeks for Batch Processes

TRADITIONAL STUDENT COURSEWARE AND BOOKS

- Student Objectives by Module
- Student Workbooks to Supplement Instructional Delivery
- Integration of Customer-Specific Graphic and Module Types
- Student Workshops Description and Instructions
- Comprehensive Review of Each Course Module’s Topic and Content in an Exam Format
- Electronic Media of Curriculum Provided
- 25 Printed Student Manuals (Optional Manuals Available)

INSTRUCTIONAL DELIVERABLE CHOICES

- Traditional Classroom
  - DeltaV DCS sent to the customer site for class to perform workshops and experience hands-on learning practice
- Virtual Classroom
  - DeltaV DCS workstation assigned to each student using GoToMyPC to perform workshops and experience hands-on learning practice with a live instructor
- Blended Learning
  - DeltaV DCS workstation assigned to each student in the cloud to perform workshops and experience hands-on learning and practice
  - Each student will have access to the DeltaV DCS for one year or up to 24 hours run-time on the DeltaV workstation
  - Additional time optional and annual renewal available

DELTAV SIMULATION FOR WORKSHOPS

- Mimic tie-back simulation for up to 50 (Continuous Processes) / 100 (Batch Processes) Control Modules, with one process area module selected from the customer’s database, with I/O simulation to demonstrate module functionality and perform workshops. (More modules optional)
- Use of up to 4 graphic displays for continuous processes / 6 for batch processes (Sequencing for equipment modules optional)
OPERATOR TRAINING HELPS ENSURE SUCCESS

The DeltaV™ Express Operator Training Solution (OTS) is a complete turnkey solution with a fixed scope and a fixed cost. This entry-level dynamic simulation solution includes a process-specific, dynamic simulation-based training platform engineered to provide a fast track, yet long-term, training solution for your operations personnel.

DeltaV Express OTS contains all of the activities of a conventional project, but covers a specific scope of the process with an identical user interface to match your facility. Express OTS includes a customized medium fidelity process model, detailed curriculum courseware, model acceptance and factory acceptance testing activities, design documentation, as well installation and training services. Training in scenarios and malfunctions are included, as are instructor tools for training management.

A FAMILIAR LEARNING ENVIRONMENT

The DeltaV Express OTS simulation environment is identical to your existing or newly configured production system environment. A copy of the system configuration is integrated with the process model. This enables the functionality of the live automation system and the training system to be identical, yet completely non-intrusive. Though focused on a specific scope of the process, the user interface environment can be expanded upon as required and as the process evolves.

Mimic simulation software — Emerson’s Dynamic Simulation — builds a world for your operators as they learn experientially. It’s a world that looks exactly like your production facility, with the identical design as your process automation system.

GROWING KNOWLEDGE AND COMPETENCY THROUGH SCENARIO-BASED TRAINING

The DeltaV Express OTS is a complete turnkey solution for improved operator performance.
MORE THAN TRAINING

Throughout the four-month Express OTS schedule, the following key activities are covered:

- Up to 800 DeltaV control modules
- Mimic medium fidelity process model
- Virtualized hardware infrastructure
- Integrated instructor functionality
- 30 malfunctions
- 5 scenarios
- Automated training reports
- Model development
- Model Acceptance Test (MAT), Factory Acceptance Test (FAT), and Site Acceptance Test (SAT)
- Train the trainer
- Documentation

CUSTOMIZED CURRICULUM AND COURSEWARE

The DeltaV Express OTS curriculum and courseware includes process configuration and workshops specific to your processes. DeltaV Express OTS will enable operations personnel to:

- Understand the process and DeltaV controls.
- Manipulate control module parameters to operate the process.
- Rationalize and manage alarms.
- Monitor process performance and optimize control system responses.
- View real-time and historical trends.
- Use best practices for handling abnormal situations.
- Know start-up and shut down procedures.
- Use the training system for development and testing.

Personnel skills on DeltaV system operation are verified through hands-on proficiency practice and evaluation of performance to standards. Personnel learn how to respond to demands of initialization, failure scenarios and malfunctions. Training reports are auto-generated for review by the instructor.

TRAINING TOOLS

Your Express OTS package includes a virtualized DeltaV hardware infrastructure which can expanded as required in the future.

The following is included within the fixed cost-fixed scope solution:

- Dell host server
- DeltaV Virtual Studio
- One Professional PLUS station
- One application station
- One operator station
- Dual widescreen monitors
- Keyboard and mouse
GROWING KNOWLEDGE AND COMPETENCY THROUGH LIFECYCLE DYNAMIC SIMULATION

IMPROVED PROJECT CERTAINTY
Lifecycle Dynamic Simulation has become a key component to improve project execution, reduce risk, improve project deliverables, and contribute to perfect execution on projects.

Lifecycle Dynamic Simulation System is a dynamic verification tool for process design, process controls and process optimization during the lifecycle of the plant and the project.

FEASIBILITY ANALYSIS AND PROCESS DESIGN BEGIN THE PROJECT
The beginning phase of using dynamic simulation for project certainty and perfect execution is design.
Process engineers use dynamic simulations to size equipment, verify E&I, explore control philosophies, conduct engineering studies, and evaluate alternative designs all intended to provide the best operating unit for the requirements and the business. Having a well thought out and verified design is the foundation for company safety and production need going forward.

COMMISSIONING AND START-UP/OPERATIONS
The next phase of use for dynamic simulation is during ICSS design, commissioning, startup, and initial operation.

Engineers use dynamic simulation to validate the control configuration, pre-test the SIS configuration, pre-tune control loops, run an integrated operational test optimization, provide pre-commissioning and commissioning support and train operator on start-up and abnormal situations.

MAINTENANCE, PLANT MODIFICATIONS AND OPTIMIZATION
The final phase of the lifecycle of dynamic simulation use is system expansion, and optimization of the running facility.

The Training Manager and Plant Engineers continue to use dynamic simulation along with the Operator training system to maintain certification, test plant modifications and to optimize the operation. Investigation of abnormal situation and adding training for this keep the system current and a viable tool for plant operation.
**DeltaV™ Elite Operator Training Solutions**

The six highlights of Elite OTS are listed below. Project Certainty is improved when configurations can be tested, operators can be trained, startups can be practiced, configuration code can be verified, and when plants can be improved last-minute without schedule impact.

| Engineering Test Tools for Perfect Project Execution | Efficient Regulatory Compliance | Faster Commissioning & Smoother Start-ups
| Operator Training | Safer Optimized Operations | Tool for Plant Improvement

Benefits and features of the Elite operator training solution are outlined below.

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<th>Design Studies</th>
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<td>• FEED Studies</td>
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<td>• Start-up and Shutdown Testing</td>
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Drive operational excellence in your facility by fostering the development of talent in your personnel.


Learn more at: www.emerson.com/DeltaVSimulation.

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