
# 2025 Training

## Course Catalog

be certain.

*Revision 11-6-25*

IMPROVE YOUR TESTING EFFICIENCY AND MAXIMIZE SYSTEM PERFORMANCE WITH **MTS TRAINING**. THESE EXPERTLY LED COURSES PROVIDE HANDS-ON LEARNING TO MAKE SURE YOU ARE THOROUGHLY FAMILIAR WITH YOUR TEST SYSTEMS AND KNOW HOW TO OPERATE THEM EFFECTIVELY. IN ADDITION TO A BROAD SELECTION OF STANDARD COURSES, MTS CAN CUSTOMIZE COURSES TO MEET YOUR SPECIFIC LAB NEEDS AND DELIVER THE TRAINING AT OUR TRAINING CENTER OR YOUR WORKPLACE.

## Training Centers


**Americas Training Center**
**MTS Systems Corporation**
14000 Technology Drive
Eden Prairie, MN 55344-2290
**USA**
Telephone: 1-952-937-4000
Toll Free: 1-800-328-2255
E-mail: info@mts.com
Internet: www.mts.com

**Asia Training Center**
**MTS Korea, Inc.**
#1007, 560 Dongtangiheung-ro
**Hwaseong-si Gyeonggi-do 18469**
**Korea**
Telephone: +82-31-728-1600
E-mail: mtsk-info@mts.com

**Europe Training Center**
**MTS Systems GmbH**
Hohentwielsteig 3
14163 Berlin
**Germany**
Telephone: +49-(0)30 81002-0
E-mail: training.europe@mts.com

**Shanghai Training Center**
**MTS Systems (China) Co., Ltd.**
Building #23, No.481, Guiping Rd.
Shanghai,
**China**
Telephone: +86-21-2415 1000
Service: +86-21-2415 1198
E-mail: mtsctraining@mts.com

## Course Selection

### Overview

As your partner in successful testing, MTS provides in-depth, focused training on the operation of the products you have purchased. We offer classroom training in three Regional Training Centers, located in the USA, Korea, and Germany.

### Training alternatives

MTS can provide onsite presentations of all course offerings. MTS also has the expert capability to develop custom courses on a broad range of test-related subjects not covered in the course schedule. *(Please allow three months for onsite course scheduling.)*

# Classroom Training

## Software Operation Courses

| DESCRIPTION | AMERICAS TRAINING CENTER | ASIA TRAINING CENTER | EUROPE TRAINING CENTER | PAGE NUMBER | GROUND VEHICLES | BIOMEDICAL | GEO & CIVIL ENGINEERING | MATERIALS | AEROSPACE (STRUCTURAL & COMPONENT) | SERVICE PRODUCT CODE |
|---|---|---|---|---|---|---|---|---|---|---|
| MTS Hardware Concepts & Series 793 Software | √ | √ | | 6 | √ | √ | √ | √ | √ | TRCAHOMTWC |
| MTS Series 793 Software with MultiPurpose TestWare® (MPT™) Test Design | √ | √ | √ | 7 | √ | √ | √ | √ | √ | TRCAMTSC |
| MTS Series 793 Software with MTS TestSuite™ Elite (mpe) Test Design | √ | √ | √ | 8 | √ | √ | | √ | √ | TRCAMTSMSC |
| MTS TestSuite Multipurpose Elite (mpe) Software | √ | √ | √ | 9 | √ | √ | | √ | √ | TRMTSMSC |
| MTS TestSuite TW Software | √ | √ | √ | 10 | √ | √ | √ | √ | √ | TRTSTWEC |
| MTS Acumen Operation with MTS TestSuite Multipurpose Elite Software | √ | | | 11 | √ | √ | | √ | | TTRACUMTSMPE |
| AeroPro™ Operator* | √ | | | 12 | | | | | √ | TRAPOC |
| Fatigue & Fracture with MTS TestSuite Software* | √ | | | 13 | √ | √ | √ | √ | √ | TRFFSC |
| RPC® Connect Basic Software Operation | √ | | √ | 14 | √ | | √ | | | TRRPCCBSOC |
| RPC® Connect Advanced Software Operation | √ | | √ | 14 | √ | | √ | | | TRRPCCASOC |
| RPC® Connect User Transition from RPC Pro | √ | | √ | 15 | √ | | √ | | | TRRPCCUTRANSC |
| Component RPC® Connect Software Operation | √ | | √ | 15 | √ | | √ | | | TRCRPCCSOC |

## Test System Operation & Application Theory Courses

| DESCRIPTION | | | | PAGE NUMBER | | | | | | SERVICE PRODUCT CODE |
|---|---|---|---|---|---|---|---|---|---|---|
| Damper Test System Operation | √ | | | 16 | √ | | | √ | | TRDTSOC |
| Durability Testing Technology | √ | √ | | 17 | √ | | | √ | | TRDTTC |
| Test Rig Design | √ | | | 18 | √ | √ | √ | √ | √ | TRTRDC |
| Elastomer Testing on Controllers with MTS Series 793 Software | √ | √ | √ | 19 | √ | | | √ | | TRETC793C |

## Training/Consulting Package

| | | | SERVICE PRODUCT CODE |
|---|---|---|---|
| MTS TestSuite MPE Training/Consulting Package *(Contact MTS Training for details)* | | 20 | TTRTSMPETCP |
| MTS TestSuite TWE Training/Consulting Package | | | |
| *(2 days software training plus 2 days consulting on custom test methods)* | | 21 | TTRTSTWETCP |

# Online Training

## Online Introductory

| | | SERVICE PRODUCT CODE |
|---|---|---|
| | 22 | |
| Series 793 Configuration | 23 | TTR793CONFIG |
| Series 793 Operator Introduction | 23 | TTR793OPINTRO |
| MultiPurpose TestWare Operator Introduction | 24 | TTR793MPTINTRO |
| TestSuite mpe Operator Introduction | 24 | TTRTSMPEOPINTR |
| TestSuite twe Operator Introduction | 25 | TTRTSTWEOPINTR |
| TestSuite twe Test Design & Results | 25 | TTRTSTWEEXPDTA |

## Online Hands-On

| | | SERVICE PRODUCT CODE |
|---|---|---|
| | 26 | |
| Series 793 Software with Hands-On Exercises | 27 | TTR793HANDSON |
| MultiPurpose TestWare Software with Hands-On Exercises | 28 | TTRMPTHANDSON |
| TestStuite MPE Software with Hands-On Exercises | 29 | TTRMPEHANDSON |
| TestStuite TWE Software with Hands-On Exercises | 30 | TTRTWEHANDSON |

# Registration

To register for an MTS training course, please contact your service sales engineer.

*Training course schedules are available online at www.mts.com.*

## Confirmation

MTS will send you a confirmation email of your course registration. Prices for standard courses include tuition, text materials, class supplies, classroom refreshments, and lunch. All other expenses are the responsibility of the student.

## Software Support Plan (SSP) Training Package

If you are an SSP customer using RPC/cRPC or AeroPro software, you are entitled to 1 pass for up to 2 training courses per 12-month contract period. Reference your SSP Contract Number when registering for the courses to use each pass. Note this pass does not include travel or lodging costs, and is only for courses at MTS training facilities.

## Cancellation policy

MTS reserves the right to cancel a class if there is not sufficient registration four weeks prior to the start date of the class. MTS will not reimburse any prearranged travel-related expenses if a class is cancelled.

If you cannot attend the course after you have registered, you must cancel your registration at least one week prior to the start of the course. Persons who do not attend a course and who do not cancel their reservations will be assessed a non-notification of cancellation fee.

## Customized training

If you have specialized needs requiring custom training, MTS can help. MTS has a large staff of engineer trainers with a wide range of experience. In many cases, customized training may be combined with a solution to an issue you may be experiencing.

*Please contact MTS for a quote for your custom training requirements.*

## Training at your facility can be more cost effective

If you have a large group needing training, consider the cost effectiveness of having MTS provide training at your facility.

MTS will deliver any course at your facility. Please see price list for base rates that include tuition, text materials, and all other classroom supplies for the students.

You are responsible for providing all hands-on training equipment, classroom facilities, and training aids such as projectors.

**BENEFITS OF ONSITE TRAINING**

- More economical for groups of four or more.
- Often provides answers to the specific questions facing your company.
- By using your equipment for the hands-on training, the students learn exactly how to use their testing system configuration.
- Scheduling flexibility can resolve shift work and other group logistics issues often associated with larger groups.

## CLASSROOM & ONSITE TRAINING

These expertly led courses provide ample hands-on learning to ensure you are thoroughly familiar with your test technology, in order to maximize the productivity and longevity of your MTS investments. MTS classroom training is available at three Regional Training Centers located in the U.S., South Korea and Germany, and all of our course offerings can be presented onsite at your facility. *(Please schedule onsite training at least three months in advance.)* We can also develop custom courses on a broad range of test-related subjects not covered in our standard course offering. Explore our course offerings on the following page.

# MTS Hardware Concepts & Series 793 Software

5 day course

**COURSE OUTLINE**

I. Introduction
   - A. Test system definitions and overview
   - B. Lab demonstration

II. Hardware
   - A. Hydraulic power supplies
   - B. Hydraulic service manifolds
   - C. Accumulators
   - D. Servovalves
     1. 2-stage servovalve
     2. 3-stage servovalve
   - E. Actuators
   - F. Mechanical components

III. Project Manager
   - A. Project basics
   - B. Default projects

IV. Station Builder
   - A. Hardware/closed-loop fundamentals
   - B. Resource identification
   - C. Configuration
   - D. Channel/control mode/hydraulic design/ Channel Limited Channel (CLC)
   - E. Inputs - internal/external/calculated
   - F. Outputs
   - G. Digital I/O

V. Station Manager
   - A. Setup/Initial arrangement
   - B. Windows/menus
   - C. Display options
   - D. Command options
   - E. Detectors and actions
   - F. Input offset/zero
   - G. Calibration file management (not calibration procedures)
   - H. Scopes and meters
   - I. Digital inputs/outputs usage
   - J. Parameter set management
   - K. Tuning principles

VI. Basic TestWare (BTW)
   - A. Data acquisition setup
   - B. Data file buffers training
   - C. Peak valley change detector training

VII. MTS MultiPurpose TestWare Fundamentals
   - A. Window navigation and definitions
   - B. Executing procedures

VIII. MTS TestSuite Fundamentals
   - A. Window navigation and definitions
   - B. Executing test runs

The MTS Hardware Concepts and Series 793 Software* class will introduce and familiarize the students with the correct set-up and operation of MTS material, simulation, and component test systems. The course content is designed for individuals new to servohydraulic testing. The instructor will discuss major system components and present the principles of closed-loop servo control. The course also introduces the students to basic operating principles of a digitally controlled servohydraulic test system. Students are provided with a hands-on approach to learn the operation of the controller and its related system electronic, hydraulic, and mechanical components. The five-day course will cover opening and running a test in both MultiPurpose TestWare (MPT) and MTS TestSuite (mpe) Software. The course does not cover designing tests in these applications. Sessions consist of a combination of classroom and laboratory exercises using the Series 793 software.

## Who should attend

This five-day course is geared toward users who are new to servohydraulics or have limited experience using them. They need to learn the basics of the hardware and be able to operate the digital controller software. The pace of the class is designed to ensure all students have the opportunity and time to engage all topics and concepts presented.

## Learning outcome

The students will have a functional understanding of the hydraulic power unit (HPU), hydraulic service manifold (HSM), servovalve, fluid care, closed loop control, actuators and load frames, limit functions, tuning. They will have an understanding of the relationship of software adjustments to the hardware.

The students will be able to launch the application, open the proper configuration/ parameter set, properly control the hydraulics, manually command the control channel, install specimens safely in their fixturing, manually tune control modes, set limits, offset inputs. The students will be able to open and run a test in MultiPurpose TestWare (MPT) and MTS TestSuite Multipurpose (mpe) software.

## Prerequisites

Students should have some operator experience with their system prior to attending. For assistance in determining which class would appropriate for you, please contact the MTS Training department. All prerequisites are the students' responsibility.

** Series 793 Software operates the FlexTest and TestStar controllers.*

## MTS Series 793 Software with MultiPurpose TestWare (MPT) Test Design

4 day course

The MTS Series 793 Software* with MultiPurpose TestWare Test Design class introduces you to basic operating principles of a digitally controlled servohydraulic test system. Students are provided with a hands-on approach to learn the operation of the controller and its related system electronic, hydraulic, and mechanical components. Sessions consist of a combination of classroom and laboratory exercises. Students will set up and run monotonic and cyclic tests using the concepts they have learned.

**COURSE OUTLINE**

I. Introduction
II. Overview 793 Application Set
  A. Application functions
  B. Hierarchy
III. Project Manager
  A. Project basics
  B. Define/create/Edit Projects
  C. Default projects
  D. Project management
IV. Station Builder
  A. Hardware/closed-loop fundamentals
  B. Resource identification
  C. Configuration
  D. Channel/control mode/hydraulic design/Channel Limited Channel (CLC)
  E. Inputs - internal/external/calculated
  F. Outputs
  G. Digital I/O
  H. Calculation/options
V. Station Manager
  A. Setup/initial arrangement
  B. Windows/menus
  C. Display options
  D. Command options
  E. Detectors and actions edit and adjustment
  F. Custom detector usage and creation
  G. Input offset/zero edit and adjustment
  H. Calibration file management (not calibration procedures)
  I. Auxiliary inputs configuration
  J. Output configuration
  K. Scopes and meters creation, edit and adjustment
  L. Digital inputs/outputs usage
  M. Parameter set management
  N. Tuning principles & control mode considerations
  O. Control compensation adjustment and configuration
  P. Calculation and formula definitions
  Q. Utilities tools and options
VI. MultiPurpose TestWare (MPT)
  A. Introduction/overview
  B Procedures
  C. Processes
  D. Specimens
  E. Sequencing
  F. Command processes
  G. Data acquisition processes
  H. Event processes
  I. Special processes
  J. Grouping processes
  K. Monitoring capabilities
  L. Executing tests
  M. Procedure options
  N. Create/edit/modify MPT procedures
  O. Create/edit/modify specimen folders
  P. Test design considerations

### Who should attend

This 4-day course is designed for students who have a practical working knowledge of a closed loop servohydraulic testing system and have experience operating their own test system. They desire instruction on adjusting the servohydraulic system and designing tests. The class pace assumes the students have a fundamental understanding of their MTS servohydraulic testing system.

### Learning outcome

The students will be able to open the proper configuration/parameter set and manually command the control channel. They will have an understanding of the interaction of specimen installation, offset inputs, and limit actions. The students will create inputs and control modes. They will be able to monitor test inputs and control in real time and understand effects of tuning and specimen characteristics. The students will create both monotonic and cyclic test procedures using MultiPurpose TestWare (MPT) procedures that will feature both advanced test flow concepts and data collection.

### Prerequisites

Students should have operator experience with their system prior to attending the course. Students must have a full understanding of basic closed loop control concepts and fundamental testing knowledge. Students should also have a working knowledge of the operating system and its graphical user interface. For students new to servohydraulic test systems, we strongly recommend attending the MTS Hardware Concepts and Series 793 Software course. For assistance in determining which class would appropriate for you, please contact the MTS Training department. All prerequisites are the students' responsibility.

** Series 793 Software operates the FlexTest and TestStar controllers.*

# MTS Series 793 Software with MTS TestSuite Elite (mpe) Test Design

4 day course

The MTS Series 793 Software* with MTS TestSuite Test Design class introduces the basic operating principles of a digitally controlled servohydraulic test system. Students are provided with a hands-on approach to learn the operation of the controller and its related system electronic, hydraulic, and mechanical components. Sessions consist of a combination of classroom and laboratory exercises. Students will set up and run monotonic and cyclic tests using concepts learned.

**COURSE OUTLINE**

I. Introduction
II. Overview 793 Application Set
  A. Application functions
  B. Hierarchy
III. Project Manager
  A. Project basics
  B. Define/create/edit projects
  C. Default projects
  D. Project management
IV. Station Builder
  A. Hardware/closed-loop fundamentals
  B. Resource identification
  C. Configuration
  D. Channel/control mode/hydraulic Design/Channel Limited Channel (CLC)
  E. Inputs - internal/external/calculated
  F. Outputs
  G. Digital I/O
  H. Calculation/options
V. Station Manager
  A. Setup/initial arrangement
  B. Windows/menus
  C. Display options
  D. Command options
  E. Detectors and actions edit and adjustment
  F. Custom detector usage and creation
  G. Input offset/zero edit and adjustment
  H. Calibration file management (not calibration procedures)
  I. Auxiliary inputs configuration
  J. Output configuration
  K, Scopes and meters creation, edit and adjustment
  L. Digital inputs/outputs usage
  M. Parameter set management
  N. Tuning principles & control mode considerations
  O. Control compensation adjustment and configuration
  P. Calculation and formula definitions
  Q. Utilities tools and options
VI. Multipurpose
  A. Introduction/overview
  B. Windows/menus
  C. Projects, tests and test runs
  D. Specimens
  E. Test execution and management
  F. Procedure creation, modification and editing
  G. Command processes
  H. Data acquisition processes
  I. Other processes
  J. Runtime displays
  K. Executing tests
  L. Procedure options
  M. Create/edit/modify procedures
  N. Reports
  O. Test design considerations

## Who should attend

This 4-day course is designed for students who have a practical working knowledge of a closed loop servohydraulic testing system and have experience operating their own test system. They desire instruction on adjusting the servohydraulic system and designing tests. The class' pace assumes students have a fundamental understanding of their MTS servohydraulic testing system.

## Learning outcome

The students will be able to open the proper configuration/parameter set and manually command the control channel. They will have an understanding of the interaction of specimen installation, offset inputs, and limit actions. The students will create inputs and control modes. They will be able to monitor test inputs and control in real time and understand effects of tuning and specimen characteristics. The students will create both monotonic and cyclic test procedures using TestSuite Multipurpose (mpe) software. Test procedures will feature both advanced test flow concepts and data collection.

## Prerequisites

Students should have operator experience with their system prior to attending the course. Students must have a full understanding of basic closed loop control concepts and fundamental testing knowledge. Students should also have a working knowledge of the operating system and its graphical user interface. For students new to servohydraulic test systems, we strongly recommend attending the MTS Hardware Concepts and Series 793 Software course. For assistance in determining which class would appropriate for you, please contact the MTS Training department. All prerequisites are the students' responsibility.

** Series 793 Software operates the FlexTest and TestStar controllers.*

# MTS TestSuite Multipurpose Elite (mpe) Software

2 day course

**COURSE OUTLINE**

I. Introduction
- A. Overview
- B. Elite/Express
- C. User interface
- D. Menus
- D. Users

II. Projects/Tests
- A. Managing projects/tests
- B. Templates/tests
- C. Procedures
- D. Activities

III. Specimens
- A. Creation
- B. Properties

IV. Test Runs
- A. Test resources
- B. Test runs

V. Scopes and Runtime Displays
- A. Message log
- B. Runtime scope
- C. General runtime properties
- D. Cycle and signal views
- E. General views

VI. Reports
- A. Report layouts
- B. Report templates

VII. Test Execution
- A. Control panel
- B. Hydraulic control
- C. Implementing a test

VIII. Variables
- A. Overview
- B. Creation, editing, modifying and managing
- C. Calculations and functions

The MTS TestSuite Multipurpose Elite Software class explores the more complex features of the application including File Playback with focus on activities beyond command and data acquisition. Students are provided with instruction consisting of a combination of classroom and laboratory exercises. Students will create their own procedures covering a variety of different testing scenarios utilizing the concepts they have learned.

## Who should attend

This course is designed for experienced users of Series 793 software who would like further instruction on developing tests.

## Learning outcome

The students will be able to create and configure optional software adjustments. They will set up, monitor, and incorporate analog/digital inputs, outputs, control modes, and detectors. This would also include data acquisition techniques such as type, file sampling, file size, and output format. The students will associate Project Folders, Configurations, Procedures, MP Test Runs and Specimen Files appropriately for their testing needs. Upon completion of the course the user will be able to create, edit, and modify Multipurpose tests.

## Prerequisites

Students should have significant and detailed operator experience with their test system prior to attending the course. Students should also have a working knowledge of the operating system and its graphical user interface. For students with limited experience, it is strongly recommended that they attend the MTS Hardware Concepts & Series 793 Software course prior to attending this class. All prerequisites are the responsibility of the student.

# MTS TestSuite TW Software

3 day course

**COURSE OUTLINE**

I. Introduction
II. Material Testing Terms and Definitions
  A. Stress/strain
  B. Modulus/yield
  C. Testing standards
III. Load Frame Safety and Operation
IV. TWE Terminology
  A. Template/tests/test runs
  B. Test procedures/activities
  C. Report templates
V. TWE Software Overview
  A. Test procedures
  B. Configuration menu
  C. Define tab
  D. Monitor tab
VI. Test Procedures
  A. Opening tests
  B. Test resources
  C. Test runs
VII. Review Tab
  A. Configure statistics
  B. Tag test runs
  C. Format charts/move markers
  D. Edit and recalculate data
VIII. Variables
  A. Creating, editing, and managing variables
  B. Calculated variables
  C. Data acquisition
IX. Modifying Tests
  A. Test flow basics
  B. Test activities basics
X. Creating Report Templates

This is a basic course on MTS TestSuite TW Elite (twe) software. The course starts with test terminology, frame operation and test-run fundamentals, and then covers other subjects such as modifying tests and customizing the test workflow. Classroom and lab exercises are performed on Electro-Mechanical (EM) software simulators and EM frames.

*Note: For more advanced training that addresses your specific testing needs, MTS recommends the MTS TestSuite TWE Training/Consulting Package that combines two days of TWE training with two days of consulting. See the course description for the TWE Training/Consulting Package on page 19 for details.*

## Who should attend

This course is designed for those who use MTS TestSuite TWE software to run tests, create/edit report templates, and modify work flow in existing tests.

## Learning outcome

The students will become familiar with using TestSuite TWE software to select and run a test, tag and recalculate data, add and configure meters, and run test reports. The students will also learn how to modify a test procedure, edit test parameters, create variables and calculated variables, define user roles, create report templates, and manage hardware resources.

## Prerequisites

Students must have some hands-on experience with their system, and have a good working knowledge of computers prior to attending. All prerequisites are the responsibility of the student.

*Note: For customers that are running TWE software on servo-hydraulic frames, MTS recommends attending the MTS Hardware Concepts and Series 793 Software course. This course covers using Series 793 software to set up basic PID tuning, signal offsets, and limit settings.*

# MTS Acumen Operation with MTS TestSuite Multipurpose Elite Software

3 day course

**COURSE OUTLINE**

I. Introduction
   - A. Overview of Acumen load frame
   - B. Overview of 793 Software and MTS TestSuite (mpe) Software

II. Operation
   - A. Characteristics of electrodynamic test system
   - B. Acumen control mode behavior and response
   - C. Using MTS TestSuite (mpe) application software to run the system

III. Navigating the Situational Awareness Panel
   - A. Observe signals
   - B. Check for sensor zero
   - C. Fixture limits and Specimen limits
   - D. Limit actions and resetting limits

IV. Guided Testing
   - A. Install a specimen
   - B. Auto-tuning
   - C. Actuator command and control mode selection

V. Designing and Running Tests
   - A. Procedure command, sequence logic, and data acquisition
   - B. Test run and specimen file creation
   - C. Scopes and runtime display
   - D. Variables and Calculations
   - E. Reports

This course will teach the students the correct set-up and operation of their MTS Acumen system. The class involves optimizing the system for specific test requirements including low force testing, delicate specimens, higher frequency, and static testing. Instruction will include test design using MTS TestSuite Multipurpose Elite software. Students are provided with instruction consisting of a combination of classroom and hands-on exercises.

## Who should attend

This course is designed for those who use MTS TestSuite mpe Software to run and modify tests, create/edit test report templates, and modify work flow on Acumen load frames.

## Prerequisites

Students must have some hands-on experience with their system and have a good working knowledge of computers prior to attending. All prerequisites are the responsibility of the student.

# AeroPro Operator

4 day course

**COURSE OUTLINE**

I. AeroPro Software
   - A. Software layout
   - B. Sensor object
   - C. Hardware object

II. Setting Up for a Simple Test
   - A. Configure sensors
   - B. Configure a test
   - C. Calibrate
   - D. Create a load table
   - E. Create profiles
   - F. Create sequences
   - G. Define event actions
   - H. Set limits
   - I. Tune the test
   - J. Retrieve data
   - K. Review data

This course provides introductory training on AeroPro™ Software. It is intended for system operators needing hands-on experience setting up and running structural tests using AeroPro, and for new users of the AeroPro software. The course incorporates extensive hands-on time to allow attendees to practice the skills learned.

## Who should attend

This course is designed for technologists and engineers who set up and run structural tests using AeroPro Software on a day-to-day basis. It will be useful for operators new to the system.

## Prerequisites

A technical degree or equivalent test background is required. Specific experience in structural testing is not mandatory; however, familiarity with servohydraulic test systems is required.

## Scheduling policy

Course dates will be scheduled once sufficient interest for this course has been received.

# Fatigue & Fracture with MTS TestSuite Software

4 day course

**COURSE OUTLINE**

I. Testing Fundamentals
   - A. Load, deformation, stress and strain
   - B. Stress-strain relations, material properties
   - C. Elastic-plastic deformation
   - D. Material strength: yield vs. fracture

II. TestSuite Fundamentals
   - A. Introduction/overview
   - B. Windows/menus
   - C. Projects, tests and test runs
   - D. Specimens
   - E. Procedure creation, modification and editing
   - F. Command processes
   - G. Data acquisition processes and management
   - H. Other processes
   - I. Runtime displays
   - J. Executing tests
   - K. Reports

III. Standard Tests
   - A. Tension
   - B. HCF/LCF
   - C. KIC fracture toughness
   - D. Fatigue crack growth

IV. Fatigue and Fracture Fundamentals
   - A. Stress-life, strain-life, and linear elastic fracture mechanics
   - B. Cracks and crack propagation
   - C. Plane stress and plane strain
   - D. Stress intensity and fracture toughness
   - E. Crack length measurement: compliance
   - F. Fracture crack growth and damage tolerance design

This course provides you with the fundamentals of material testing and the use of MTS TestSuite Multipurpose Software for fatigue and fracture testing applications. Students will learn how to adjust and operate the software to run a material test as well as analyze data. The instructor will review the fundamentals of material testing as well as recent advancements including for Additive Manufacturing. Class days are divided into classroom training and laboratory training.

## Who should attend

This course is targeted at material test system operators, test engineers, and laboratory managers who are using Fatigue and Fracture applications.

## Learning outcome

At the completion of the course the students will have both a theoretical and practical knowledge of a wide range of material tests. Students will use MTS TestSuite software to run standard ASTM tests. These tests include fatigue, fracture toughness and fatigue crack growth. In addition, students will be able to process test data and generate reports.

## Prerequisites

Students should have some experience prior to attending this course in servohydraulic testing and a working knowledge of the current Microsoft operating system. For assistance in determining which class would appropriate for you, please contact the MTS Training department.

## RPC® Connect Basic Software Operation

4 day course

**COURSE OUTLINE**

I. RPC Fundamentals
II. Data Acquisition
  A. How and what data to acquire?
  B. Data acquisition equipment & preparation
III. Getting started with RPC Connect
IV. Data preparation – Analysis
  A. Time, Spectral, and Statistical analysis
  B. Import and data analysis tools in RPC
V. Data preparation – Editing
  A. Time and Frequency based editing
  B. Data editing tools in Connect
VI. Measure & Evaluate System Behavior (FRF)
VII. Invert and Prepare FRF Inverse
VIII. Iterate
  A. Understanding iteration process
  B. Evaluate iteration results
  C. Perform automatic iterations
IX. Run Durability Test
X. Introduction to Fatigue

This course teaches the basics of the RPC Connect software package for data validation, analysis, lab simulations and durability test setup. This course also provides an introduction to cycle counting and the fatigue damage calculation capabilities of RPC Connect. Included will be discussion of RPC simulation theory as well as software application operation to provide comprehensive learning experience including hands-on lab practice. Advanced simulation techniques are covered in the RPC Connect Advanced course.

### Who should attend

Entry-level engineers, test operators or experienced technicians with some related test experience. The course will provide the training necessary to allow simulation operators to understand simulation concepts and run RPC Connect software.

### Prerequisites

Students should have some experience prior to attending this course in using the MTS 793 application and a working knowledge of the current Microsoft operating system. All prerequisites are the students' responsibility.

## RPC® Connect Advanced Software Operation

4 day course

**COURSE OUTLINE**

I. System Analysis
II. Advanced Data Analysis
  A. Differentiate/integrate
  B. Channel transformation
  C. Degree of Freedom transformation
III. Advanced Data Editing
IV. FRF Diagnostic Tools
  A. H1 and H2 FRF
  B. Coherence
  C. Estimating control bands and sensors
V. Matrix Decomposition
  A. Singular Value Decomposition introduction
  B. SVD tools
  C. Control band estimator
VI. FRF Inverse and Analysis
VII. Improving iteration results
VIII. Component testing tools
IX. Advanced Fatigue tools
  A. Data classification methods
  B. Damage Calculation models
  C. Material editor
  D. Damage based editing
  E. Pseudo damage analysis
  F. Fatigue in Applications
X. Building processes

This course lays the foundation of using RPC Connect to its maximum capability. This course is for experienced RPC Connect users who are looking to expand their existing knowledge and ways to improve their lab efficiency. The Advanced simulation techniques for setting up complex RPC tests using various analytical tools will be discussed. The training also includes in-depth discussion of some of the advanced analysis methods for better system understanding and sound decision making capability.

This course also provides additional depth on fatigue damage calculation capabilities of RPC Connect. The course builds on the fatigue theory concepts introduced in RPC Connect Basic course and provides additional information on algorithms, advanced features and more complex fatigue analysis methods.

### Who should attend

Experienced RPC Connect users who have simulation experience, but want to further expand their RPC Connect knowledge.

### Prerequisites

Students should have some experience prior to attending this course in using the MTS 793 and RPC Connect applications along with a working knowledge of the current Microsoft operating system. All prerequisites are the students responsibility.

## RPC® Connect User Transition from RPC Pro

3 day course

**COURSE OUTLINE**

I. Review RPC Fundamentals
II. Getting Started with RPC Connect
  A. RPC Connect advantages
  B. New RPC Connect software handling features
  C. New RPC Project Explorer
  D. Working with new tools interface
III. Connect Setup
IV. Data Preparation – Analysis
  A. Time, Spectral and Statistical analysis
  B. Data analysis tools in RPC Connect
V. Data Preparation – Editing
  A. Time and Frequency based editing
  B. Data editing tools in RPC Connect
VI. Connect Model
VII. Connect Simulate
VIII. Connect Test
IX. Miscellaneous Tools and Topics
  A. Process manager
  B. Batch processor
  C. Frequently used tools

This course lays the foundation of how to use MTS new RPC Connect software package for data validation, analysis, lab simulations and durability test setup. The course is intended to help RPC Pro users to transition to using RPC Connect. The course discusses 6 steps of RPC testing using Connect along with some of the commonly used tools. Training devotes less time to simulation theory and more to Connect application training to help user make the seamless transition from Pro to Connect.

The course is geared towards users with some experience with Pro, and the difficulty level can be considered between the Basic and Advanced courses. It will cover some of the advanced topics commonly used, but a user should attend the RPC Connect Advanced course for learning much more complex testing methods.

### Who should attend

Experienced engineers, test operators or technicians with some related RPC test experience. The course will provide the training necessary to allow simulation operators to understand simulation process in Connect and make the transition from Pro to Connect. New users with no past RPC experience are recommended to attend the RPC Connect Basic course.

### Prerequisites

Students should have some experience prior to attending this course in using the MTS 793 and RPC Pro applications along with a working knowledge of the current Microsoft operating system. All prerequisites are the students' responsibility.

## Component RPC Connect Software Operation

3 day course

**COURSE OUTLINE**

I. cRPC Connect Fundamentals
  A. What is RPC?
  B. The six steps of RPC
  C. Why RPC?
II. Getting Started with cRPC Connect Layout
III. Data Preparation – Analysis
  A. Import and data analysis tools in cRPC
  B. Visual inspection
  C. Time, Spectral, and Statistical analysis
IV. Channel Setup
  A. Networking and configuring hardware
  B. Drive and Response channels configuring
V. Measure & Evaluate System Behavior (FRF)
VI. Invert and Prepare the FRF
  A. Control band selection
VII. Iterate
  A. Understanding iteration process
  B. Convergence and divergence
  C. Time, frequency, and amplitude analysis
VIII. Run Durability Test
  A. Defining test sequences
  B. Point by Point Monitoring

This course shares the same lecture materials as the RPC Connect Basic Software Operation course. However, the training covers only essential basic simulation theory and devotes more time on cRPC Connect application training, following step-by-step procedures. PC-based hands-on exercises use simplified examples. The pace of the hands-on exercises is intentionally slower to ensure basic proficiency of all students. This class is not sufficient preparation for the RPC Connect Advanced class.

### Who should attend

Entry-level engineers or experienced technicians with some related experience. The course will provide the training necessary to allow simulation operators to understand simulation concepts and run cRPC Connect software.

### Prerequisites

Students should have some experience prior to attending this course in using the MTS 793 application and a working knowledge of the current Microsoft operating system. All prerequisites are the students' responsibility.e students' responsibility.

*Optional Materials – The instructor may provide handouts for self-guided study or cover the following during class, as time and class interest permits.*

» *Advanced Analysis & Editing Tools*
» *FRF Diagnostic Tools*
» *Fatigue Tools*

# Damper Test System Operation

3 day course

**COURSE OUTLINE**

I. Introduction
II. Damper Testing Principles & Issues
  A. The damper test market
  B. Damper test techniques
  C. Current trends in damper testing
  D. Damper test solutions
III. Mechanical Aspects of a Damper Test Frame
  A. Frame & actuator design
  B. Performance test requirements vs. durability test requirements
  C. Accumulator sizing
IV. Damper Test Software Introduction
  A. Damper software installation
  B. PC requirements & controller platform requirements
V. Laboratory Damper Testing
VI. Damper Test System Software
  A. Damper channel & signal configuration
  B. Concepts of performance testing
  C. Concepts of durability testing
  D. Concepts of temperature sweep testing
  E. Concepts of sine sweep testing
  F. Gas & seal friction testing
  G. Concepts of NVH testing
VII. Damper Test Analysis
  A. Creating a test workbook
  B. Opening a test workbook
  C. Data plotting & reporting
VIII. Example Tests
  A. Create & run a performance test
  B. Create & run a durability test
  C. Create & run a temperature sweep test
  D. Create & run a sine sweep test
  E. Create & run a NVH test

This course provides you with the fundamentals of damper testing and the use of the MTS Damper Software running on MTS Series 793 software to execute tests in your laboratory. Damper test setup, execution, and analysis are covered through classroom lectures and laboratory exercises. Both Performance and Durability testing are covered.

## Who should attend

This course is targeted at damper system operators, test engineers, and laboratory managers. For more advanced topics that address your specific testing needs, contact MTS about consulting services.

## Prerequisites

Students must have a thorough understanding of Series 793 software including PID tuning, signal offsets, and limit settings. For those who are new to the MTS controllers with Series 793 software, MTS strongly recommends attending either the *MTS Hardware Concepts and Series 793 Software* course or the *MTS Series 793 Software with MultiPurpose TestWare (MPT) Test Design* course prior to taking the Damper class.

# Durability Testing Technology

2 day course

**COURSE OUTLINE**

I. Introduction
   - A. Durability testing objectives
   - B. Durability testing in the vehicle development process

II. Assessment of Service Conditions
   - A. In-service & proving ground loading
   - B. Road-load data acquisition
   - C. Transducer selection & vehicle instrumentation
   - D. Recording systems
   - E. Digitization of data
   - F. Time & frequency domain analysis

III. Laboratory Reproduction of Service Conditions
   - A. Fixturing
   - B. Servohydraulic test systems & components

IV. Programming of Test Systems
   - A. Test excitation
   - B. Servocontrollers
   - C. Servoloop tuning & stabilization techniques
   - D. Command compensation methods

V. Test Evaluation Metrics
   - A. Test correlation
   - B. Fatigue analysis methods *(load-, stress-, & strain-life)*
   - C. Cycle counting
   - D. Damage accumulation

In this course, your instructor presents the principles for fatigue-correlated durability testing of ground vehicles and their components using servohydraulic laboratory test equipment. You examine the choices required when designing a durability test, from vehicle instrumentation and data collection through test rig design and test excitation. The course includes an introduction to fatigue analysis methodologies applicable to durability test data editing, test correlation, and evaluation. Numerous test examples and problem-solution scenarios are included. Particular emphasis is given to the design of fatigue tests for ground vehicle structures and components subjected to variable amplitude loading. Test rig design is introduced in this course. A more rigorous, detailed approach to design is provided in another MTS course called Test Rig Design.

## Who should attend

The course is excellent training for test or design engineers and technicians who require an understanding of modern simulation testing methods.

- It should be especially useful for engineers who are planning new test facilities, or who must regularly request testing services from other departments.
- It will be helpful for experienced test engineers and technicians who are looking to fill gaps in their understanding, and for lab managers and technicians who desire a broader understanding of test design.

## Prerequisites

A technical degree or equivalent background in test applications is preferred.

# Test Rig Design

2 day course

**COURSE OUTLINE**

I. Test Rig Concept Definition
II. Design criteria
  A. Stiffness
  B. Mass
  C. Strength/durability
  D. Safety
III. Component Selection
  A. Bellcranks
  B. Actuators
  C. Servovalves
  D. Hydraulic power supplies
  E. Accumulators
  F. Bearings
  G. Bolted connections
  H. Reaction bases

This course is available as a companion to the 3-day training course on Durability Testing Technology, or as a stand-alone course. The course focuses on the principles of test rig fixture design for testing vehicle components.

Important mechanical design issues are addressed, including:

- Restraint
- Fixture kinematics
- Safety
- Performance
- Component sizing
- Common test configurations

## Who should attend

This course was developed for engineers and technicians who are new to the technology, whether they are new employees of existing facilities or employees involved in setting up a new testing rig or laboratory. It will also be valuable for engineers and technicians who have experience with certain aspects of test technology and who desire expanded knowledge of test rigs and fixtures.

## Prerequisites

A technical degree or equivalent background in test applications is preferred.

# Elastomer Testing on Controllers with MTS Series 793 Software

3 day course

**COURSE OUTLINE**

I. Day 1
- A. System Overview
- B. Elastomer Software Overview
- C. Typical Static Deflection Test
- D. Static Deflection Test Data
- E. Basic Elastomer Theory Part 1
- F. Static Deflection Test in Simulation
- G. Static Deflection Lab
- H. Static Deflection Macros

II. Day 2
- A. Basic Dynamic Characterization Test
- B. Dynamic Characterization Test Data
- C. Basic Elastomer Theory Part 2
- E. Dynamic Characterization Test in Simulation
- F. Dynamic Characterization Lab
- G. Dynamic Characterization Macros

III. Day 3
- A. Finish up Dynamic Characterization
- B. Basic Elastomer Theory Part 3
- C. Transmissibility
- D. Control Parameter Sets
- E. Process Settings
- F. Demo Mode
- G. Load Path Deflection Correction Set
- H. Conditioning Errors
- I. Acceleration Errors
- J. Tech Support

This is a basic course that covers the use of MTS Elastomer Test Systems using digital controllers with Series 793 Software. Training includes an overview of viscoelastic theory, test system setup, and operation with practical test examples and data analysis as it pertains to tests available with the **MTS Model 793.31 Dynamic Characterization** and **Model 793.33 Static Deflection software**. Test setup, execution, and analysis are covered through classroom lectures and laboratory exercises.

*Note: This course does not include the Elastomer Express™ Application.*

## Who should attend

This course is targeted for engineers new to elastomer testing using MTS controllers with Series 793 software, whether they are new to the test lab or they are just setting up a test system. For more advanced topics that address your specific testing needs, contact MTS about consulting services.

## Prerequisites

Students must have a thorough understanding of Series 793 software including PID tuning, signal offsets, and limit settings. For those who are new to the MTS controllers with Series 793 software, MTS strongly recommends attending either the *MTS Hardware Concepts and Series 793 Software course* or the *MTS Series 793 Software with MultiPurpose TestWare (MPT) Test Design* course prior to taking the Elastomer Applications class. All prerequisites are the responsibilities of the student.

# MTS TestSuite MPE Training/Consulting Package

4 day course

**COURSE OUTLINE**

I. Introduction
- A. Overview
- B. Elite/Express
- C. User interface
- D. Menus
- E. Users

II. Projects/Tests
- A. Managing projects/tests
- B. Templates/tests
- C. Procedures
- D. Activities

III. Specimens
- A. Creation
- B. Properties

IV. Test Runs
- A. Test resources
- B. Test runs

V. Scopes and Runtime Displays
- A. Message log
- B. Runtime scope
- C. General runtime properties
- D. Cycle and signal views
- E. General views

VI. Reports
- A. Report layouts
- B. Report templates

VII. Test Execution
- A. Control panel
- B. Hydraulic control
- C. Implementing a test

VIII. Variables
- A. Overview
- B. Creation, editing, modifying and managing
- C. Calculations and functions

For customers who are converting from 793 Multipurpose TestWare (MPT) to TestSuite Multipurpose Elite (mpe) or customers who are new to the MTS TestSuite mpe software, MTS offers a package that combines product training and test consulting. This is an excellent option to quickly bring your staff up to speed on the new software and to develop your test methods so you can continue testing with minimal interruption.

Training helps ensure that your staff understands the software and is familiar with setting up and editing tests and reports. Once your staff is comfortable with the software, the test consultant works with you to design or convert your test methods to your specific requirements.

The training is done at your location using your conference room facilities and your computers. Each student receives a 30-day license to run TestSuite mpe in simulation mode. This enables them to actively participate during the class and apply their new skills after it. Consulting can take place in the classroom and in your lab with your systems testing your products.

## The benefits to this approach are twofold

1. It can reduce the time required to transition your lab to MTS TestSuite mpe software.
2. As your testing needs change, your staff will have the skills required to modify and develop test templates.

## Who should attend

This training is designed for test engineers who need to create or modify tests using MTS TestSuite mpe software. No prior experience with MTS TestSuite mpe is needed, **however a familiarity with material testing and servo-hydraulic test systems is required.** Detailed knowledge of the tests that need to be conducted will maximize the benefits of the course.

## Training – 2 days (*8 hours each*)

Training on the MTS TestSuite mpe product gives you a foundation for creating and maintaining the tests and reports you need now and into the future.

- Training is conducted at the customer site in a conference room environment.
- Class size is limited to eight students.
- Hands-On training is provided for each student using the software's simulation mode.
- Training includes an MTS TestSuite mpe 30-day simulation mode license for each student.
- Customer provides student computers.

## Consulting – 2 days (*8 hours each*)

Consulting services give you expert assistance with your choice of the following:

- Converting 793 Multipurpose TestWare (MPT) procedures to TestSuite MP Elite (mpe) tests
- Creating a new test from a written description
- Optimizing test procedures

## Advance planning session

A planning session conducted online or by phone with the customer, trainer and consultant is included prior to the course in order to make the course time most effective.

## *Options*

*To further customize the package you can add:*

*An additional day of consulting at the package price. Custom test templates, written in advance by MTS so they are sure to be ready when you need them.*

# MTS TestSuite TWE Training/Consulting Package

4 day course

**COURSE OUTLINE**

Training concentrates on essential core concepts and best practices. Some content can be customized, based on your requirements.

I. Workflow Basics
   - A. Running tests
   - B. Setting up projects

II. TW Elite Software Setup
   - A. Configuration menu
   - B. User management
   - C. Review tab results, statistics, tagging, charts/markers

III. Variables
   - A. Creating, editing, and managing
   - B. Calculated variables and functions

IV. Modifying Tests
   - A. Test flow and test activities
   - B. Extracting data
   - C. Data acquisition

V. Creating Report Templates with Optional Reporter Add-in
   - A. Test run and test report templates
   - B. Report generation options

For customers who are converting from TestWorks 4 to TestSuite TWE or customers who are new to the MTS TestSuite TWE software, MTS offers a package that combines product training and test consulting. This is an excellent option to quickly bring your staff up to speed on the new software and to develop your test methods so you can continue testing with minimal interruption.

Training helps ensure that your staff understands the software and is familiar with setting up and editing tests and reports. Once your staff is comfortable with the software, the test consultant works with you to design or convert your test methods to your specific requirements.

The training is done at your location using your conference room facilities and your computers. Each student receives a 30-day license to run TestSuite TWE in simulation mode. This enables them to actively participate during the class and apply their new skills after it. Consulting can take place in the classroom and in your lab with your systems testing your products.

### The benefits to this approach are twofold

1. It can reduce the time required to transition your lab to MTS TestSuite TWE software.
2. As your testing needs change, your staff will have the skills required to modify and develop test templates.

### Who should attend

This training is designed for test engineers who need to create or modify tests using MTS TestSuite TWE software. No prior experience with MTS TestSuite TWE is required, but a familiarity with material testing and test systems is desirable. Detailed knowledge of the tests that need to be conducted will maximize the benefits of the course.

### Training – 2 days (*8 hours each*)

Training on the MTS TestSuite TWE product gives you a foundation for creating and maintaining the tests and reports you need now and into the future.

- Training is conducted at the customer site in a conference room environment.
- Class size is limited to four students.
- Hands-On training is provided for each student using the software's simulation mode.
- Training includes an MTS TestSuite TWE 30-day simulation mode license for each student.
- Customer provides student computers.

### Consulting – 2 days (*8 hours each*)

Consulting services give you expert assistance with your choice of the following:

- Converting TestWorks 4 methods to TestSuite TW templates
- Creating a new test from a written description
- Optimizing test procedures
- Connecting with external devices
- Communicating with LIMS and other software

### Advance planning session

A planning session conducted online or by phone with the customer, trainer and consultant is included prior to the course in order to make the course time most effective.

### *Options*

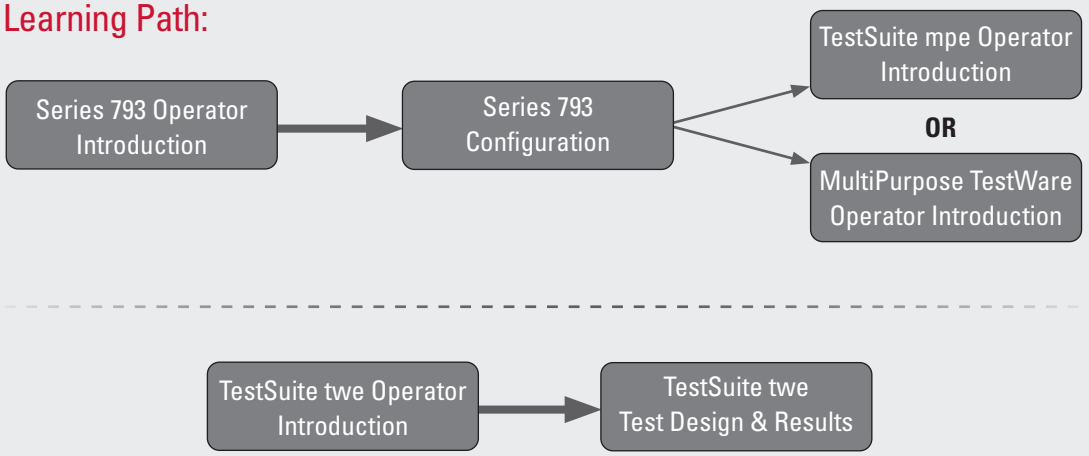
*To further customize the package you can add:*

- An additional day of consulting at the package price.
- Custom test templates, written in advance by MTS so they are sure to be ready when you need them.

# LIVE ONLINE INTRODUCTORY TRAINING

Quickly learn testing software operation basics with these instructor-led introductory classes. Conducted in two sessions of two-hours each, these courses will help you get started with simple test procedures. Additional course details, schedules and registration information can be found at www.mts.com.

## Learning Path:




*Note: If you would like more information, please contact MTS Training to be connected with an instructor who can help you determine which class is most appropriate for you.*

## Series 793 Operator Introduction

Duration: 4 hours divided into 2 sessions

**COURSE TOPICS**

- Station Manager and Station Setup navigation
- Sensor feedback and Control mode behavior
- Setting Limits and Actions
- Manual command careful operation
- P-gain tuning
- Calibration file assignment
- Sensor Offset Zero

The Series 793 Operator Introduction class will familiarize the student with the hydraulic and control mode system. It will include an overview of Series 793 Station Manager sensors, command, and tuning. The class will allow the student to safely and confidently protect the specimen and monitor signals during start up and operation.

** Series 793 Software operates the MTS FlexTest® and TestStar™ controllers.*

### Technology Requirements

For this course, students will an Internet connection of 10 Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser.

### Prerequisites

None

### Tuition

Contact your service sales specialist for pricing details.

*MTS recommends that the 793 Operator Introduction & 793 Configuration courses be taken together.*

## Series 793 Configuration

Duration: 4 hours divided into 2 sessions

**COURSE TOPICS**

- 793 File management
- PID tuning
- Station Builder Configuration modification
- Adding Analog Inputs, Calculated Inputs, Digital I/O
- Adjustments for added signals
- Basic TestWare® data acquisition and fatigue detectors

The Series 793 Configuration class will provide instruction on how to modify 793 files to include external devices. Discussion of PID Tuning will go into further depth for dynamic and static performance. The student will acquire the skills for basic test set-up.

### Technology Requirements

For this course, students will an Internet connection of 10 Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser.

### Prerequisites

Strongly recommend taking the Series 793 Operator Introduction class or having equivalent experience.

### Tuition

Contact your service sales specialist for pricing details.

*Note: The 793 Configuration course builds on the knowledge and content of the 793 Software Operator Introduction course. These classes are designed and scheduled to be taken together to provide a full understanding of 793 Software basics.*

## MultiPurpose TestWare Operator Introduction

Duration: 4 hours divided into 2 sessions

**COURSE TOPICS**

- Procedure Creation
- Standard Command Processes
- Sequencing
- Data Types
- Modes
- Effective Data Gathering and Techniques

The MultiPurpose TestWare® (MPT™) Operator Introduction class covers test procedure creation. It includes generating command, controlling test flow, and data acquisition. The student will acquire the basic skills to successfully create and design both a simple monotonic and cyclic test.

### Technology Requirements

For this course, students will an Internet connection of 10 Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser.

### Prerequisites

Students must have a fundamental understanding of the Series 793 Software, particularly Station Manager.

### Tuition

Contact your service sales specialist for pricing details.

## TestSuite mpe Operator Introduction

Duration: 4 hours divided into 2 sessions

**COURSE TOPICS**

- Fundamental concepts
- Navigation
- Command Generation and Practical Data Acquisition approaches
- Test results

The MTS TestSuite™ Multipurpose Elite (MPE) Operator Introduction class covers test creation. It includes generating command, controlling test flow, and data acquisition. The student will acquire the basic skills to successfully create and design both a simple monotonic and cyclic test.

### Technology Requirements

For this course, students will an Internet connection of 10 Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser.

### Prerequisites

Students must have a fundamental understanding of the Series 793 Software, particularly Station Manager.

### Tuition

Contact your service sales specialist for pricing details.

## TestSuite twe Operator Introduction

Duration: 4 hours divided into 2 sessions

**COURSE TOPICS**

- Basic EM frame safety and use for new operators
- Overview of TWE and TWX
- Loading parts
- Running tests
- Reviewing results

The MTS TestSuite™ TWE Operator Introduction class will cover basic test operation. This class incorporates test execution with fundamental real-time operation. Beginning level review and configuration of results will be included.

### Technology Requirements

For this course, students will an Internet connection of 10 Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser.

### Prerequisites

None

*Note: For customers that are running TWE software on servo-hydraulic frames, MTS recommends attending Series 793 Operator Introduction and Series 793 Configuration. TThese courses cover using Series 793 software to set up basic PID tuning, signal offsets, and limit settings.*

### Tuition

Contact your service sales specialist for pricing details.

*MTS recommends that the TestSuite twe Operator Introduction & TestSuite twe Test Design & Results courses be taken together.*

## TestSuite twe Test Design & Results

Duration: 4 hours divided into 2 sessions

**COURSE TOPICS**

- Test Procedures
- Test Flow
- Activities (primary tension test properties)
- Data collection Fundamentals
- Test-Run display
- Data export

The MTS TestSuite™ TWE Test Design & Results class will include basic test design. Essential test construction and composition is covered using existing test templates. It will show the student how data is captured along with optimizing the data acquisition process. The class includes various ways to select and export data and results.

### Technology Requirements

For this course, students will use an Internet connection of 10 Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser.

### Prerequisites

Strongly recommend taking the MTS TestSuite TWE Operator Introduction class or having equivalent experience.

### Tuition

Contact your service sales specialist for pricing details.

*Note: The TestSuite twe Test Design & Results class builds on the knowledge and content of the TestSuite twe Software Operator Introduction course. These classes are designed and scheduled to be taken together to provide a full understanding of TestSuite twe Software basics.*

# LIVE ONLINE TRAINING WITH HANDS-ON EXERCISES

As an alternative to classroom or onsite training, these instructor-led in-depth courses provide detailed information on software operation, including real-time practice exercises. Similar in length to classroom training, these courses are delivered over several days in twice-a-day two-hour sessions.

## Learning Path:

Series 793 Software with Hands-On Exercises

**OR**

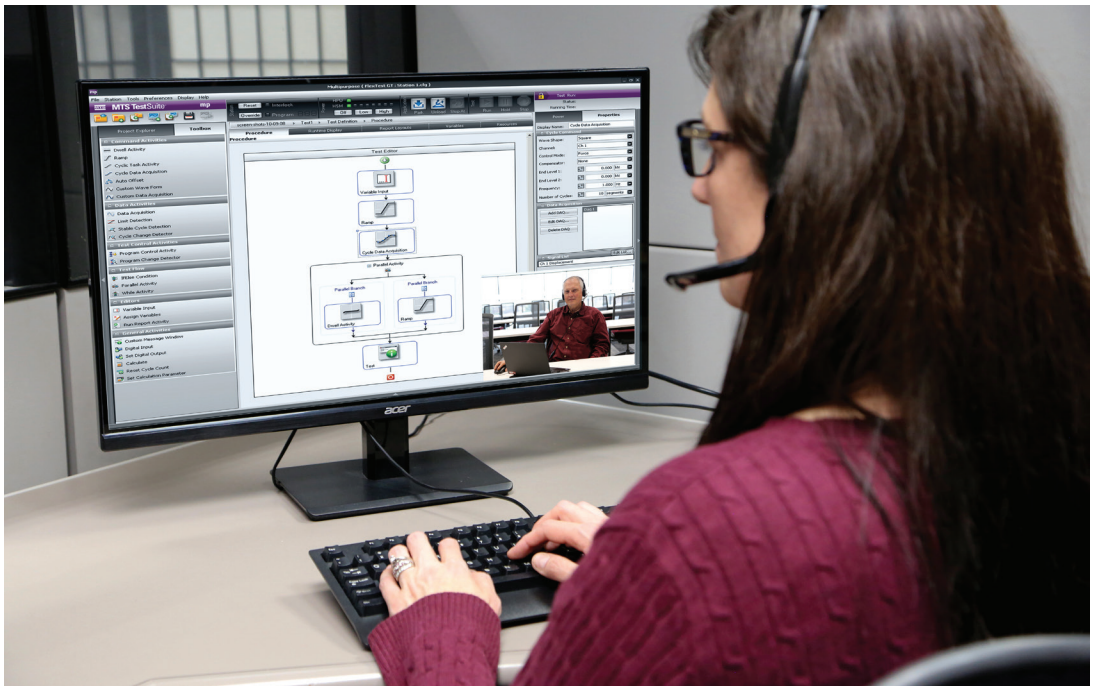
Series 793 Operator Introduction and Series 793 Configuration

→ MultiPurpose TestWare Software with Hands-On Exercises

**OR**

→ TestSuite mpe Software with Hands-On Exercises

*Note: If you would like more information, please contact MTS Training to be connected with an instructor who can help you determine which class is most appropriate for you.*



## Series 793 Software with Hands-On Exercises

Duration: 4 Days, 16 hours total divided into two, two-hour sessions per day

**COURSE TOPICS**

- System overview and component definitions
- User interface definitions
- Sensor monitoring
- Control mode behavior and command definitions
- P-gain tuning and waveshapes
- Calibration file management
- Zeroing a signal and recognizing its consequences
- Limits and Actions
- Electronic circuit identification
- Adding new sensor signals and calculations
- I-gain tuning, Force control stiffness, Compensator discussion
- Basic TestWare data acquisition

The Series 793 Software with Hands-On Exercises class will discuss and demonstrate fundamentals of servohydraulic system operation. The class will provide remote access to an MTS PC. Students will operate Station Manager for a variety of performance expectations using the concepts they have learned.

### Technology Requirements

For this course, students will need an Internet connection of 10Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser. For remote access to PC, we recommend using as large a monitor as available.

### Hands-On Lab Exercises

- Start Station Manager, set Limits and Actions, Tune P-gain control modes
- Offset/Zero a sensor signal and recognize the consequences
- Add and adjust extra sensor signals
- Tune square waves, Force control I-gain, sine wave Compensators
- Basic TestWare design and data acquisition

### Prerequisites

Students should have some operator experience with their system prior to attending.

### Tuition

Contact your service sales specialist for pricing details.

## MultiPurpose TestWare Software with Hands-On Exercises

Duration: 3 Days, 12 hours total divided into 2, two-hour sessions per day

**COURSE TOPICS**

- Overview of MPT windows, icons, files management, cycle counters
- Actuator command descriptions and logic sequencing
- Understanding Interrupt logic
- Describing some of the most useful monitors and their sequencing
- Creating data acquisition instructions
- Repeating Groups and Profiles
- Coordinating Procedure files with Specimen files

The MultiPurpose Testware Software with Hands-On Exercises class will discuss and demonstrate designing test instructions and viewing results for servohydraulic systems. The class will provide remote access to an MTS PC. Students will create their own procedures covering a variety of different testing scenarios using the concepts they have learned.

### Technology Requirements

For this course, students will need an Internet connection of 10Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser. For remote access to PC, we recommend using as large a monitor as available.

### Hands-On Lab Exercises

- Design a Procedure with Actuator Command processes
- Include interrupts to Actuator Command processes
- Include Timed and Peak Valley data acquisition and view data file
- Add a Group to the Procedure and practice Specimen File changes

### Prerequisites

Attendees should take a Series 793 Software training course(s) or have equivalent experience prior to attending.

### Tuition

Contact your service sales specialist for pricing details.

## TestStuite MPE Software with Hands-On Exercises

Duration: 3 Days, 12 hours total divided into two, two-hour sessions per day

**COURSE TOPICS**

- Run tests, create test runs, generate real-time information, and test reports
- Create, save, and open templates, tests, data, and results
- Arrange and format the User Interface
- Format test parameters and properties
- Export reports, results, and raw data
- Create users, roles, and application access
- Define test command, data acquisition, test flow, and other test activities
- Optimize test workflow
- Create, define, and setup variables and calculations

The MTS TestSuite mpe Software with Hands-On Exercises class explores features of the application. The class will provide remote access to an MTS PC. Students will create their own procedures covering a variety of different testing scenarios using the concepts they have learned.

### Technology Requirements

For this course, students will need an Internet connection of 10Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser. For remote access to PC, we recommend using as large a monitor as available.

### Hands-On Lab Exercises

- Define and run both monotonic and cyclic tests
- Create data acquisition using different modes and types
- Configure operator interactions and test automation
- Define results, variables, and calculations
- Create and save templates, tests, results, and data

### Prerequisites

Attendees should take a Series 793 Software training course(s) or have equivalent experience prior to attending.

### Tuition

Contact your service sales specialist for pricing details.

## TestStuite TWE Software with Hands-On Exercises

Duration: 4 Days, 16 hours total divided into two, two-hour sessions per day

**COURSE TOPICS**

- Run tests, create test runs, generate real-time information, and test reports
- Create, save, and open templates, tests, data, and results
- Arrange and format the User Interface
- Format test parameters and properties
- Export reports, results, and raw data
- Create users, roles, and application access
- Define test command, data acquisition, test flow, and other test activities
- Optimize test workflow
- Create, define, and setup variables and calculations

The MTS TestSuite twe Software with Hands-On Exercises class explores features of the application. The class will provide remote access to an MTS PC. Students will create their own procedures covering a variety of different testing scenarios using the concepts they have learned.

### Technology Requirements

For this course, students will need an Internet connection of 10Mbps or higher, the ability to listen to audio (headphones with a mic are recommended), and a recent version of an Internet browser. For remote access to PC, we recommend using as large a monitor as available.

### Hands-On Lab Exercises

- Define and run monotonic tests
- Create data acquisition using different modes and types
- Configure operator interactions and test automation
- Define results, variables, and calculations
- Create and save templates, tests, results, and data

### Prerequisites

Students should have some operator experience with their system prior to attending.

*Note: For customers that are running TWE software on servo-hydraulic frames, MTS recommends attending Series 793 Operator Introduction and Series 793 Configuration. These courses cover using Series 793 software to set up basic PID tuning, signal offsets, and limit settings*

### Tuition

Contact your service sales specialist for pricing details.

NOTES

## Regional Business Centers

### THE AMERICAS

**MTS Systems**
14000 Technology Drive
Eden Prairie, MN 55344-2290
USA
Telephone: 952-937-4000
Toll Free: 800-328-2255
E-mail: info@mts.com
Internet: www.mts.com

### EUROPE

**MTS Systems France**
BAT EXA 16
16/18 rue Eugène Dupuis
94046 Créteil Cedex
France
Telephone: +33-(0)1-58 43 90 00
E-mail: contact.france@mts.com

**MTS Systems (Germany) GmbH**
Hohentwielsteig 3
14163 Berlin
Germany
Telephone: +49-(0)30 81002-0
E-mail: euroinfo@mts.com

**MTS Systems S.R.L.** a socio unico
Strada Pianezza 289
10151 Torino
Italy
Telephone: +39-(0)11 45175 11 sel. pass.
E-mail: mtstorino@mts.com

**MTS Systems Norden AB**
Datavägen 37b
SE-436 32 Askim
Sweden
Telephone: +46-(0)31-68 69 99
E-mail: norden@mts.com

**MTS Systems Limited**
98 Church Street,
Hunslet,
Leeds
LS102AZ
United Kingdom
Telephone: +44 (0) 113 270 8011
E-mail: mtsuksales@mts.com

### ASIA/PACIFIC

**MTS Japan Ltd.**
Raiden Bldg. 3F 3-22-6,
Ryogoku, Sumida-ku,
Tokyo 130- 0026
Japan
Telephone: +81 3 5638 0850
E-mail: mtsj-info@mts.com

**MTS Korea, Inc.**
4th F., ATEC Tower, 289,
Pankyo-ro, Bundang-gu
Seongnam-si
Gyeonggi-do 13488,
Korea
Telephone: +82-31-728-1600
E-mail: mtsk-info@mts.com

**MTS Systems (China) Co., Ltd.**
Floor 34, Building B,
New Caohejing International
Business Center,
No.391, Guiping Road,
Xuhui District
Shanghai 200233
P.R.China
Telephone: +021-24151000
E-mail: MTSC-Info@mts.com

**MTS Testing Solutions Pvt Ltd.**
Unit No. 201 & 202, Second Floor
Donata Radiance,
Krishna Nagar Industrial Layout,
Koramangala, Bangalore - 560029
Karnataka, India
Telephone: + 91 80 46254100
Email: mts.india@mts.com

## Training Centers

**Americas Training Center**
**MTS Systems Corporation**
14000 Technology Drive
Eden Prairie, MN 55344-2290
USA
Telephone: 1-952-937-4000
Toll Free: 1-800-328-2255
E-mail: info@mts.com
Internet: www.mts.com

**Asia Training Center**
**MTS Korea, Inc.**
#1007, 560 Dongtangiheung-ro
Hwaseong-si Gyeonggi-do 18469 Korea
Telephone: +82-31-728-1600
E-mail: mtsk-info@mts.com

**Europe Training Center**
**MTS Systems GmbH**
Hohentwielsteig 3
14163 Berlin
Germany
Telephone: +49-(0)30 81002-0
E-mail: training.europe@mts.com

**Shanghai Training Center**
**MTS Systems (China) Co., Ltd.**
Building #23, No.481, Guiping Rd.
Shanghai,
China
Telephone: +86-21-2415 1000
Service: +86-21-2415 1198
E-mail: mtsctraining@mts.com

**MTS Systems Corporation**
14000 Technology Drive
Eden Prairie, MN 55344-2290 USA

ISO 9001 Certified QMS
http://www.mts.com


100-219-237n TrainingCourses • Printed in U.S.A. • 11/25