MTS Hardware and Analog Controllers

4 day course

COURSE OUTLINE

I. Introduction
II. Servohydraulic systems
  A. Closed-loop vs. open loop
  B. Definition of terms
III. Hydraulic and mechanical components and service
  A. Hydraulic power supplies
    1. Principles of operation
    2. Setup and maintenance procedures
  B. Hydraulic service manifolds
    1. Principles of operation
    2. Accumulators
      a. Principles of operation
      b. Mechanical adjustments
      c. Dither adjustments
  C. Servovalves
    1. 2-stage servovalves
      a. Principles of operation
      b. Mechanical adjustments
      c. Dither adjustments
    2. 3-stage servovalves
      a. Principles of operation
      b. Tuning inner loop
  D. Actuators
    1. Construction
    2. Hookup
    3. Drain line setup
    4. Maintenance considerations
  E. Mechanical components
    1. Load frames
    2. Grips
    3. Fixtures
IV. Operation of electronic components
  A. Overview of 458 controllers
  B. Overview of 407 controllers
  C. Hydraulic controls
  D. Program controls
  E. Display functions and controls
  F. DC controllers and conditioners
  G. AC controllers and conditioners
  H. Peripheral equipment
V. Testing limits
  A. Limit detectors
  B. Underpeak detectors
  C. Error detectors
VI. Test programmers
  A. MicroProfiler™
  B. Function generators
VII. System operation
  A. Operation safety practices
  B. Test specimen mounting practices
  C Tuning adjustments (PID)

This training course is designed to introduce and familiarize the students with the correct operational techniques for efficient setup and operation of MTS material, simulation, and component test systems. The instructor discusses major system components and presents the principles of closed-loop servocontrol. The instructor and you perform "hands-on" operation of MTS controller-based systems and their related electronic, hydraulic, and mechanical components.

Who should attend

This course is designed for students new to using servohydraulics and who will be operating an analog controller.

Learning outcome

The students will have a functional understanding of the HPU, HSM, servovalve, fluid care, closed-loop control, actuators and load frames, limit functions, and tuning. They will understand set point, span, adjusting limits, under-peak detection and error detectors. They will be able to set up and run tests using the analog controller.

Prerequisites

Students should have some supervised experience with their system prior to attending. All prerequisites are the responsibilities of the student.

Equipment

The class covers MTS hydraulic and mechanical components and analog electronics. The instructor concentrates on MTS analog controllers.