Industrial Hydraulics

This five-day course primarily focuses on hydraulic system troubleshooting. A comprehensive study of hydraulic system components and their major causes of failure will be examined in detail. Plant maintenance personnel will be asked to bring plant-specific prints for review and study during the print reading section of the course. In addition, a detailed study of hydraulic system contamination control is included, with an emphasis on component and system design changes that should be incorporated into all existing and future systems.

I. Hydraulic Components
  - System Familiarization
  - Introduction to Hydraulic Systems
  - Hydraulic Fluids
  - Filtration Systems
  - Hydraulic Pumps
  - Pressure Control Devices
  - Manual Directional Control Valves
  - Check Valves
  - Needle Valves
  - Hydraulic Cylinders
  - Hydraulic Flow Control Valves

II. Hydraulic Laboratories
  - Paired Cylinders in a Circuit
  - Hydraulic Press Application
  - Hydraulic Jack Application
  - Hydraulic Positioner
  - Hydraulic Symbols and Schematics

III. Physical Properties
  - Flow Rate in Hydraulic Systems
  - Force in Hydraulic Systems
  - Hydraulic Force Transformers
  - Work Done with Hydraulic Systems
  - Power in Hydraulic Systems
  - Energy in Hydraulic Systems
  - Pressure Drop

IV. Hydraulic Pump Design
  - Standards
  - Applications
  - Pump Classifications
  - Basic Pump Types
  - Dynamic (Kinetic)
  - Centrifugal Pump Classes
  - Terminology