



Introduction to Industrial Hydraulic Fluid Power Concepts and Components

Course Description

This course is designed to introduce the student to how fluid power is used in the industry and show students the major components that can be found in fluid power systems. Hydraulic components and systems will be discussed in general as the instructor builds a hands-on working tabletop model of a complete hydraulic system.

Prerequisites: None

Course Length: 2 days

Textbooks: CFC Custom Binder

Course Outline

Safety

- Lock-out/Tag out

Hydraulic Fundamentals, Fluids & Reservoirs

- Pascal's law, Force (PSI) and Motion (GPM)
- Purpose, properties and uses of various fluids
- Sizing, construction and heat dissipation of reservoirs
- Filter use, locations and sizing, intake, return and pressure

Actuators

- Construction, operation and applications of various types

Pressure Controls

- Construction, operation and applications of various types
- Proper use of relief, reducing, brake, sequence, and counterbalance valves

Pumps and Pumping Principles

- Construction, operation and applications of Gear, Vane and Piston Pumps

Flow Controls and Flow Dividers

- Construction and operation

Directional Controls

- Construction, operation and applications of various types

Accumulators & Accessories

- Construction, theory and operation
- Heat exchangers and heaters

Learning Objectives

- List advantages & disadvantages of a hydraulic vs. a pneumatic system
- Define flow rate, GPM & LPM
- Explain force and the term PSI
- Describe the main function of reservoirs
- Explain the main function of pumps & list different types
- Describe main function of cylinders & motors, directional controls, pressure controls, flow controls, and accumulators
- Define the term and concept of filtration.
- Describe the main function of flow dividers, flow meters, gauges, and pressure taps
- List the terms and uses of fittings, tube, pipe, and hoses
- Explain the use and look of schematics.
- Outline hydraulic safety including lockout tag-out procedures