



Industrial Safety for Fluid Power

Course Number 12

Course Description

This course covers many of the common safety hazards encountered when operating, serving and maintaining fluid power systems. Prevention and awareness is the best approach to any fluid power dangers. This course, in the time allowed, tries **to explain as many common hazards as possible**. **Safety is everyone's** responsibility; however, the lack of awareness, training and not knowing the dangers of fluid power systems can cause serious injuries and even be fatal.

Prerequisites: None

Course Length: 4 or 8 hour classes

Hand-outs: IFPS safety guide lines for fluid power, **CFC's list of do's and don'ts**, and an IFPS safety card for injection injuries

Course Outline	Learning Objectives
<p>Safety basics</p> <ul style="list-style-type: none"> - Lock-out/Tag-out confirming de-pressurization - PPE personal protection equipment - Several O.S.H.A. requirements <p>Conductors and Connectors</p> <ul style="list-style-type: none"> - Proper pressure ratings of hose, pipe and tubing - Fitting selection concerns, threads, forged vs. cast - Proper mounting and installation <p>Fluids and gases</p> <ul style="list-style-type: none"> - Fire and explosions - Burns and injection to skin - MSDS sheets - Non-breathable gases - Housekeeping needs <p>Mechanical dangers</p> <ul style="list-style-type: none"> - Loaded cylinders, raised dump beds - Whipping hoses - Proper component removal - Rotating members <p>Pressure Controls</p> <ul style="list-style-type: none"> - Limiting excessive pressures - De-compression and shock problems <p>Pumps and Pumping Principles</p> <ul style="list-style-type: none"> - Construction, operation and applications <p>Accumulators and pressure vessels</p> <ul style="list-style-type: none"> - Removal and disassembly pre-cautions - Actuator movement <p>Electrical</p> <ul style="list-style-type: none"> - Proper class and use of VOM meters - Unintentional movement of actuators - Electrocutation dangers 	<ul style="list-style-type: none"> • Practice safe procedures to ensure trapped fluids have been relieved internally and suspended loads have been lowered or properly blocked to permit safe maintenance operations • Identify necessary control de-activation procedures • Explain hydraulic pressure-force and flow-speed relationships • Identify and correlate O.S.H.A. regulations to actual field conditions • Use charts to determine actuator force and speed for given pressures and flows • Recognize typical cylinder movement causes • Identify intensified- excessive pressure causes • Proper installation of hydraulic components with respect to alignment, connections, and pre-filling with fluids • Identify and work with the fluid conductors used to carry hydraulic fluid to ensure proper pressure ratings, routing, and to reduce failures • Implement leak prevention using proper fittings, assembly techniques, and seal materials • Identify different types of connectors • Identify causes of excessive pressure spikes that damage components • Recognize fluid properties and potential dangers • Explain the VOM meter classes and their application

