شركة ميرك العربية السعودية
MEIRC Saudi Arabia

Basic Hydraulic System

Duration 5 Days

Introduction

Topics covered include hydraulic fundamentals, system operation, pump, valve and actuator service, as well as seals, lines and hydraulic system components.

Who Should Attend

Engineers & Technicians.

Objectives

Upon successful completion of the course, the student will be able to:
1. Describe hydraulic system operating principles
2. Explain the operation of different types of hydraulic pumps
3. Diagnose and service hydraulic pump failures
4. Explain the operation of hydraulic valves
5. Diagnose and repair hydraulic valve failures
6. Explain the operation of hydraulic actuators
7. Diagnose and repair of actuator failures
8. Explain the need for hydraulic filters
9. Service hydraulic filters
10. Select the proper hydraulic fluid
11. Perform hydraulic system maintenance

Course Outline

Hydraulic Fundamentals
- Basic Principles of Hydraulics
- How hydraulic Systems Work
- Comparing Hydraulic Systems
- Uses of Hydraulics

Hydraulic Pumps
- Types of Hydraulic Pumps
- Gear Pumps
- Vane Pumps
- Piston Pumps
- Hydraulic Pump Ratings
- Malfunctions of Hydraulic Pumps
- Diagnosing Hydraulic Pump Failures

Hydraulic Valves
- Types of Hydraulic Valves
- Pressure Control Valves
- Directional Control Valves
- Volume Control Valves
- Miscellaneous Valves
- Troubleshooting Hydraulic Valves

Hydraulic Cylinders
- Types of Cylinders

- Single Acting Cylinders
- Double Acting Cylinders
- Vane Type Cylinders
- Testing and Diagnosing Cylinder Problems
- Maintenance of Cylinders

Hydraulic Motors

- Comparing Pump and Motor Design
- Types of Hydraulic Motors
- Gear Motors
- Vane Motors
- Piston Motors
- Hydraulic Motor Application & Efficiency
- Hydraulic Motor Malfunctions

Hydraulic Accumulators

- Use of Accumulators
- Types of Accumulators
- Pneumatic Accumulators
- Weight Loaded Accumulators
- Spring Loaded Accumulators

Hydraulic Filters

- Why and How are Filters Used
- Types of Filters
- Degrees of Filtration
- Contamination
- Maintenance of Filters

Reservoirs, Oil Coolers, Hose, Pipes, Tubes and Couplers

- Reservoirs
- Oil Coolers
- Flexible Hoses
- Pipes and Tubes
- Pipe Couplers

Hydraulic Seals

- Use of Seals
- Types of Seals
- Seal Failures and Remedies

Hydraulic Fluids

- What Hydraulic Fluids Do
- Properties of Hydraulic Fluids
- Maintaining Good Fluid

General Maintenance

- Maintenance of the Whole System
- Importance of Oil and Filter Changes
- Preventing Leaks

Diagnosing and Testing Hydraulic Systems

- Seven Basic Steps
- Trouble Shooting Charts

Symbols Used in Fluid Power Diagrams