MATRIX
ENGINEERING CONSULTANTS

Troubleshooting Electro-Hydraulic Systems Training Topics

1. Review of hydro-mechanical concepts.
    A. Force – Pressure relationship.
    B. Velocity - Flow relationship.
    C. HP requirements.
        a. Steady state.
        b. Acceleration and deceleration.
2. Actuators and feedback sensors.
    A. Cylinders and linear sensors.
    B. Motors and rotary Sensors.
    C. Sensor types.
        a. Analog.
        b. Digital .
        c. Internal vs External.
3. Pumps: Input power.
    A. Constant flow pumps.
    B. Variable Flow pumps.
4. Directional valves.
    A. Spool style industrial valve construction.
    B. Flow control functions.
    C. Spool Position Sensors.
    D. Proportional solenoid valves.
5. Valve Amplifiers.
    A. Analog adjustable.
    B. Digital adjustable.
    C. HMI Interface.
6. Troubleshooting system by identifying fault type.
    A. Mechanical, Hydraulic, or Electrical.

   B. Evaluating error codes.

7. Understanding and utilizing electrical and hydraulic schematics for diagnosis.
8. Identifying faulty components.
9. Introduction to Controller Area Networks (CAN)
   A. J1939.
   B. CANopen.
   C. ODBII.
   D. Proprietary networks.