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Course Name

Industrial Hydraulics System Performance & Troubleshooting

Sector Name

Mechanical Engineering

Document Type

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Industrial Hydraulics System Performance & Troubleshooting

Course Introduction

Industrial hydraulic systems depend on the controlled interaction of pressure, flow, fluid condition, pumps, valves, actuators, and control components. When system performance deteriorates, symptoms such as slow actuator movement, insufficient force, excessive heat, unstable pressure, noise, leakage, or erratic operation can originate from several locations within the circuit. Replacing the component closest to the symptom may therefore fail to resolve the actual hydraulic problem.

Boost Consulting & Training offers this course to develop a practical engineering approach to understanding and troubleshooting industrial hydraulic systems. Participants learn to read hydraulic circuits, interpret pressure and flow behavior, evaluate pumps, valves and actuators, investigate fluid and contamination problems, and use measurements to isolate faults systematically. Practical cases move from observed system behavior through circuit analysis and testing to an evidence-based engineering response.

The **main concept of this course** is to diagnose hydraulic problems by understanding how pressure, flow, components, controls, and fluid condition interact across the complete system.

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Target Audience

- ✓ Mechanical and hydraulic engineers
- ✓ Plant and equipment engineers
- ✓ Mechanical supervisors and technical specialists
- ✓ Engineers responsible for hydraulic equipment and system performance

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Learning Objectives

- ✓ Explain the fundamental relationships between pressure, flow, force, speed, and power in hydraulic systems.
- ✓ Interpret industrial hydraulic circuits and component functions.
- ✓ Evaluate the operating behavior of hydraulic pumps, valves, and actuators.
- ✓ Identify causes of pressure, flow, temperature, leakage, and performance abnormalities.
- ✓ Assess hydraulic fluid condition and contamination-related problems.
- ✓ Select appropriate measurements and test points during fault investigation.
- ✓ Distinguish component faults from wider circuit and operating problems.
- ✓ Apply structured troubleshooting to industrial hydraulic system failures.

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Industrial Hydraulics System Performance & Troubleshooting

Course Outline

✓ Day 01

Reading Hydraulic System Behavior

Understanding Hydraulic Power

- ✓ Connect pressure, flow, force, actuator speed, and hydraulic power.
- ✓ Understand how resistance and load influence system pressure.
- ✓ Distinguish pressure availability from actual flow delivery within a circuit.

Reading Hydraulic Circuits

- ✓ Interpret common hydraulic symbols and circuit arrangements.
- ✓ Trace fluid paths through supply, control, actuation, and return sections.
- ✓ Complete a **Hydraulic Circuit Mapping Exercise** from schematic to operating behavior.

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Course Outline

✓ Day 02

Understanding Pumps and Actuators

Evaluating Hydraulic Pump Performance

- ✓ Compare common pump types and their operating characteristics.
- ✓ Assess displacement, flow delivery, efficiency, leakage, and pressure capability.
- ✓ Recognize symptoms associated with suction problems, wear, and declining pump performance.

Diagnosing Actuator Performance

- ✓ Evaluate hydraulic cylinders and motors under changing loads.
- ✓ Investigate slow movement, insufficient force, drifting, and unstable operation.
- ✓ Complete a **Pump and Actuator Diagnosis Case** using pressure, flow, and movement evidence.

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Course Outline

✓ Day 03

Understanding Hydraulic Control Problems

Evaluating Valve Behavior

- ✓ Examine directional, pressure, and flow-control valve functions.
- ✓ Identify the effects of incorrect settings, internal leakage, sticking, and restriction.
- ✓ Connect valve behavior with abnormal actuator and system response.

Diagnosing Pressure and Flow Instability

- ✓ Investigate fluctuating pressure, inconsistent speed, pressure loss, and poor response.
- ✓ Trace interactions between control settings, loads, and circuit conditions.
- ✓ Run a **Hydraulic Control Challenge** involving multiple possible fault locations.

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Course Outline

✓ Day 04

Controlling Fluid and Contamination Problems

Understanding Hydraulic Fluid Condition

- ✓ Examine viscosity, temperature, oxidation, aeration, and water contamination.
- ✓ Understand how fluid condition affects lubrication, sealing, efficiency, and component response.
- ✓ Identify signs that system symptoms may originate from fluid-related problems.

Managing Contamination

- ✓ Recognize particle contamination and common routes of contaminant entry.
- ✓ Evaluate filtration, cleanliness, and contamination control practices.
- ✓ Conduct a **Hydraulic Contamination Investigation** linking fluid evidence with component deterioration.

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Course Outline

✓ Day 05

Solving Complex Hydraulic System Problems

Building a Structured Fault Investigation

- ✓ Define system symptoms before adjusting or replacing components.
- ✓ Select pressure, flow, temperature, and other measurements needed to isolate the fault.
- ✓ Test possible causes systematically through the hydraulic circuit.

Restoring System Performance

- ✓ Distinguish adjustment, component repair, fluid correction, and circuit-level solutions.
- ✓ Verify that corrective action restores expected pressure, flow, movement, and temperature behavior.
- ✓ Complete an **Industrial Hydraulic Troubleshooting Simulation** from initial symptoms through circuit diagnosis to the final engineering response.

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Dec. 7, 2026	Dec. 11, 2026	5 days	4250.00 \$	UAE , Dubai

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