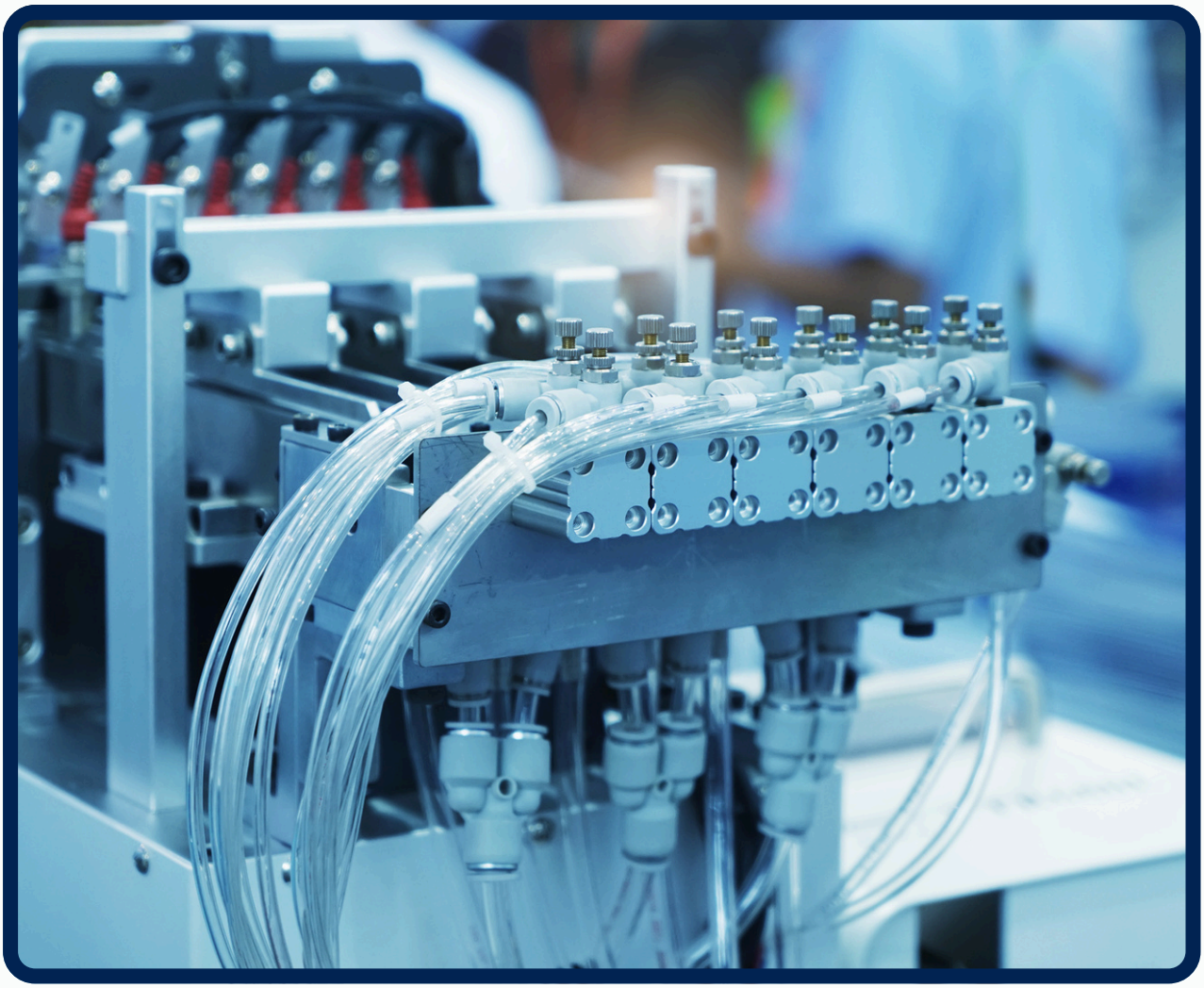
MeTec
EMPWER YOUR TECHNICAL SKILLS

HYDRAULIC AND PNEUMATIC SYSTEMS OPTIMIZATION



OUR ACCREDITATION & PARTNERS

HYDRAULIC AND PNEUMATIC SYSTEMS OPTIMIZATION

OVERALL DESCRIPTION:

This course is designed to move beyond basic principles and dive deep into practical strategies for system optimization. Participants will learn how to diagnose inefficiencies, implement energy-saving techniques, and apply a systematic approach to troubleshooting. The goal is to equip your staff with the specialized knowledge to transform these essential systems from potential liabilities into high-performing, reliable assets that directly contribute to your organization's bottom line.

Course Objectives:

Upon completion of this course, participants will have the knowledge and skills to:

- Analyze and improve the energy efficiency of hydraulic and pneumatic circuits to reduce operational costs.
- Perform advanced troubleshooting to identify and resolve common and complex system failures.
- Evaluate and select the right components, such as valves, pumps, and actuators, for specific applications to ensure optimal performance.
- Implement best practices for preventative maintenance and condition monitoring to extend component lifespan.
- Design and modify circuits to enhance safety, reliability, and cycle speed.
- Apply a root cause analysis methodology to prevent recurring issues and improve system integrity.

Course Outline:

Foundations of System Optimization:

- Understanding the physics of fluid power: pressure, flow, and energy transfer.
- Mapping and analyzing existing hydraulic and pneumatic circuits.
- Identifying common sources of inefficiency and energy waste.

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Course Outline:

Hydraulic Systems Optimization:

- Advanced pump control strategies: variable speed drives and load sensing.
- Proper sizing of accumulators and fluid reservoirs.
- Reducing heat generation through efficient component selection and fluid management.
- Practical troubleshooting for pressure, flow, and temperature-related issues.

Pneumatic Systems Optimization:

- Compressed air generation and distribution efficiency.
- Leak detection and repair strategies for significant energy savings.
- Proper sizing and selection of FRL (Filter-Regulator-Lubricator) units.
- Optimizing actuator speed and force with minimal air consumption.

Maintenance and Reliability:

- Condition-based monitoring techniques: pressure and temperature sensors.
- Root Cause Analysis (RCA) workshop for system failures.
- Developing a preventative maintenance schedule for key components.

Safety and Best Practices:

- Adhering to ISO and national safety standards.
- Fluid cleanliness and filtration best practices.
- Safe lockout/tagout procedures for system maintenance.

WHO SHOULD ATTEND?

This course is ideal for maintenance technicians, engineers, maintenance supervisors, and anyone involved in the design, operation, or maintenance of industrial machinery. It is particularly beneficial for professionals seeking to enhance their skills in troubleshooting, energy conservation, and system reliability to drive continuous improvement in their facilities.

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.