

Mechanical Equipment Fundamentals for Non-Engineers Training Course

28 March – 1 April 2027
Johannesburg

AGILE LEADERS
Training Center

Mechanical Equipment Fundamentals for Non-Engineers Training Course

Ref: 1881_240322 **Date:** 28 March – 1 April 2027 **Location:** Johannesburg **Fees:** 6000 Euro

Overview

Mechanical Equipment Fundamentals for Non-Engineers Training Course is a one-week foundation programme for operations, maintenance support, procurement, safety, project, finance, and administrative professionals who work around mechanical assets and leave with a Mechanical Equipment Literacy Workbook. Participants connect force, motion, energy, pressure, temperature, and flow with pumps, valves, heat exchangers, compressors, bearings, seals, drives, and piping. Equipment diagrams, data sheets, operating observations, and maintenance records build confident technical communication without assigning engineering design authority. Agile Leaders Training Center delivers this practical mechanical equipment literacy course.

Who Should Attend

- Operations and production personnel who coordinate with mechanical teams
- Procurement and commercial staff who review equipment and vendor documents
- Project coordinators who track mechanical packages and handovers
- Safety personnel who need to recognize machinery hazards and operating boundaries
- Maintenance planners and support staff who interpret work requests and equipment histories
- Managers responsible for asset-related decisions

No engineering qualification is required. The course develops literacy and safe communication; it does not qualify participants to design equipment, calculate ratings, authorize repairs, perform intrusive maintenance, or bypass safeguards.

Departments and Industries

The course supports cross-functional teams in manufacturing, energy, utilities, facilities, transport, construction, process industries, and public infrastructure.

- Operations, production, and facilities management
- Maintenance planning and asset support
- Procurement, contracts, and supply chain
- Projects and engineering coordination
- Health, safety, quality, and technical assurance

Learning Objectives

By the end of this course, participants will be able to:

- Explain basic mechanical principles using correct workplace terminology
- Identify common mechanical equipment and describe its system purpose
- Read simplified drawings, symbols, nameplates, and data sheets
- Relate operating variables to equipment behaviour and stated limits
- Recognize signs that require safe escalation
- Communicate equipment observations and maintenance needs clearly

Course Agenda

Day 1: Mechanical Principles and Equipment Language

- Force, Motion, Torque, Power, and Energy Relationship Map
- Pressure, Temperature, Flow, and Level Variable Guide
- Units, Conversions, and Magnitude Sense-Check Exercise
- Static, Rotating, Reciprocating, and Transverse Motion Comparison
- Mechanical System Boundary and Energy-Path Diagram

Day 2: Pumps, Compressors, Valves, and Piping

- Centrifugal and Positive-Displacement Pump Function Map
- Pump Suction, Discharge, Cavitation, and Flow-Restriction Signs
- Compressor Purpose, Stages, Cooling, and Protection Overview
- Isolation, Control, Check, and Relief Valve Identification Guide
- Piping Components, Supports, Expansion, and Flow-Direction Walkthrough

Day 3: Heat Transfer, Drives, Bearings, and Seals

- Heat-Exchanger Purpose and Flow Arrangement Guide
- Motor, Coupling, Belt, Chain, and Gearbox Energy Path
- Bearing Function, Load, Lubrication, and Temperature Indicators
- Seal and Gasket Purpose, Leakage Signs, and Escalation
- Guarding, Nip Point, and Stored-Energy Awareness

Day 4: Drawings, Limits, and Equipment Condition

- Nameplate, Data Sheet, Schematic, and Vendor-Drawing Navigation
- Operating Envelope, Alarm, Trip, and Design-Limit Distinction
- Noise, Vibration, Heat, Leakage, Corrosion, and Wear Matrix
- Equipment History, Work Order, and Inspection Record Review
- Evidence Quality and Observation Recording Practice

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Day 5: Maintenance Interfaces and Technical Communication

- Preventive, Predictive, Corrective, and Breakdown Maintenance Comparison
- Inspection, Lubrication, Alignment, Balancing, and Condition-Monitoring Interfaces
- Equipment Observation and Defect-Description Practice
- Safe Escalation, Isolation Awareness, and Competence-Boundary Scenario
- Capstone Exercise: Mechanical Equipment Literacy Workbook

Practical Exercises

Guided, non-intrusive activities convert equipment information into safe workplace decisions.

- Trace energy and material flow through a simplified mechanical system
- Match pumps, valves, drives, bearings, and seals to their functions
- Extract information from a nameplate, data sheet, and schematic
- Classify abnormal observations and prepare an evidence-based escalation note
- Build a cross-functional equipment briefing

FAQs

Is this course suitable for complete beginners?

Yes. It starts with basic mechanical language and uses workplace examples rather than engineering derivations.

Does the course qualify participants to operate or repair machinery?

No. Operation, isolation, inspection, and repair remain subject to procedures, authorization, and competent-person requirements.

Which equipment is covered?

The course introduces pumps, compressors, valves, piping, heat exchangers, motors, drives, bearings, and seals at a functional awareness level.

How does it help procurement and project personnel?

Participants practise reading descriptions, nameplates, data sheets, drawings, limits, and maintenance evidence so they can ask clearer questions.

What will participants take back to work?

A Mechanical Equipment Literacy Workbook containing system maps, equipment guides, document-reading aids, observation records, and an escalation template.

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Conclusion

Participants return able to discuss mechanical equipment, interpret basic evidence, recognize concerns, and coordinate safely with engineering and maintenance specialists.