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# Portable Ultrasound, Thermography and Alignment Tools Training Course

14 – 18 February 2027
Amman

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**Ref:** 1696_62183 **Date:** 14 – 18 February 2027 **Location:** Amman **Fees:** 4200 GBP

Portable Ultrasound, Thermography and Alignment Tools is a 1-week training course for maintenance supervisors and technicians who check plant with handheld instruments, producing a technician inspection route card. Fixed-interval overhauls still replace healthy parts while missing early bearing, electrical and steam faults that portable instruments reveal in minutes. Jupiter Prime Training runs this course to put these instruments confidently into shop-floor hands.

## Why Portable Ultrasound, Thermography and Alignment Tools Matter Now

Three forces push maintenance crews towards portable inspection: smaller instruments that cost far less than fixed monitoring systems, fewer specialist engineers on site so technicians must take readings themselves, and plant owners asking crews to justify every intrusive overhaul. Crews that listen, scan and align before they strip a machine catch faults early and avoid self-inflicted damage; crews that keep to the calendar alone open healthy equipment and still miss failures between visits. The course rests on condition-based maintenance principles, the P-F interval idea and manufacturer guidance for each instrument family.

## Who Gains Most from Portable Ultrasound, Thermography and Alignment Tools

- Technicians who walk routes and take ultrasound, thermal and vibration readings
- Supervisors who assign inspection rounds and act on findings
- Fitters who align pumps, fans and gearboxes after repair
- Electricians who scan panels and switchgear for heat and discharge
- Lubrication staff who grease bearings by sound rather than by calendar

Mixed mechanical and electrical crews from process plants, utilities and manufacturing sites gain most when they attend together.

## Portable Ultrasound, Thermography and Alignment Tools Capabilities

Participants leave able to pick up an instrument, take a trustworthy reading and turn it into a clear repair call:

- Test bearings, traps and valves with airborne and contact ultrasound — repair priorities
- Apply emissivity and reflected temperature settings to thermal images — valid findings
- Calculate laser alignment corrections and thermal growth offsets — machine reassembly
- Assess hot joints and discharge on electrical panels — isolation decisions
- Specify acoustic greasing quantities for bearing families — lubrication routines
- Build a combined walkdown route by criticality — supervisor scheduling

## Key Portable Ultrasound, Thermography and Alignment Tools Terms

- Airborne ultrasound — high-frequency sound above human hearing, converted by a detector so technicians can hear leaks, friction and electrical discharge.
- Emissivity — how efficiently a surface emits infrared energy; wrong settings make a thermal camera misread temperature.
- Delta-T — the temperature difference between a suspect component and a similar healthy one under equal load.
- P-F interval — the time between a detectable potential failure and the point of functional failure.
- Soft foot — a machine foot that does not sit flat, distorting the frame when its bolt is tightened.
- Thermal growth — the change in shaft height as a machine heats to running temperature, allowed for during cold alignment.

## Portable Ultrasound, Thermography and Alignment Tools Day by Day

### Day 1: From Calendar Tasks to Condition Checks

- Time-Based Versus Condition-Based Tasks — Choosing Which Routines to Replace
- P-F Interval and Early Warning Signs — Timing Handheld Inspections
- Matching Tools to Failure Modes — Selecting Ultrasound, Infrared or Vibration
- Handheld Vibration Pens and Shock Pulse Meters — Screening Bearings Quickly
- Tool Care, Calibration Checks and Battery Discipline — Trusting Field Readings

### Day 2: Airborne and Contact Ultrasound

- Ultrasound Detector Settings and Headphone Listening — Hearing Bearing Friction
- Acoustic Lubrication of Bearings — Stopping Over- and Under-Greasing
- Compressed Air and Gas Leak Surveys — Tagging Leaks for Repair
- Steam Trap and Valve Passing Tests — Isolating Failed Traps
- Electrical Corona, Tracking and Arcing Detection — Flagging Switchgear Risks

### Day 3: Infrared Thermography in the Field

- Thermal Camera Focus, Emissivity and Reflected Temperature — Taking Valid Images
- Electrical Panel and Connection Scans — Ranking Hot Joints by Severity
- Motor, Bearing and Coupling Heat Patterns — Spotting Mechanical Distress
- Refractory, Insulation and Steam Line Surveys — Locating Heat Losses
- Thermal Image Reports and Delta-T Criteria — Raising Work Requests

### Day 4: Laser Alignment and Precision Fitting

- Rough Alignment, Soft Foot and Pipe Strain Checks — Preparing Machines
- Laser Shaft Alignment Systems and Tolerance Tables — Correcting Offset and Angularity
- Thermal Growth Targets and Cold Offsets — Aligning for Running Conditions
- Belt and Pulley Laser Alignment — Extending Drive Belt Life
- Bearing Heater Fitting and Torque Tooling — Assembling Without Damage

## Day 5: Practising the Technician Inspection Route Card

- Route Design by Criticality and Access — Applying Day 1 Choices
- Combined Ultrasound and Thermal Walkdown — Applying Days 2 and 3
- Alignment Verification After Repair — Applying Day 4 Tolerances
- Recording Findings as CMMS Work Requests — Closing the Feedback Loop
- Technician Inspection Route Card — Completing the Work Product

## Applying Portable Ultrasound, Thermography and Alignment Tools After the Course

- Run a compressed air leak survey on one header with an ultrasound detector and tag every leak for repair.
- Replace one calendar greasing task with acoustic lubrication on a group of critical motor bearings.

## Portable Ultrasound, Thermography and Alignment Tools Questions FAQ

### What are portable ultrasound, thermography and alignment tools, and why do they matter now?

They are handheld instruments that let technicians hear, see and correct machine faults before failure. Cheaper instruments and fewer specialists on site make them the practical way to replace blind calendar tasks.

### Which roles gain most from portable ultrasound, thermography and alignment tools training?

Maintenance technicians, fitters, electricians, lubrication staff and their supervisors gain most, because they take the readings and act on them during daily rounds.

### How does portable ultrasound, thermography and alignment tools training differ from a connected maintenance technology course?

It is hands-on instrument use for shop-floor crews. Connected technology courses address engineers choosing sensor networks, data platforms and analytics.

### What do you bring back from portable ultrasound, thermography and alignment tools training?

You bring back a technician inspection route card naming assets, instruments, reading limits and the action for each finding.

## Portable Ultrasound, Thermography and Alignment Tools: The Way Forward

The technician inspection route card lists each asset on the round, the instrument to use, the alarm limit and the response. Its first use is deciding which calendar overhauls can switch to condition checks, agreed by the supervisor with the crew. After three months of rounds, revisit the reading limits against the faults actually found and tighten or relax them.