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COURSE BROCHURE

Turbine Condition Monitoring and Outage Planning Training Course

30 November – 4 December 2026
Milan

Turbine Condition Monitoring and Outage Planning Training Course

Ref: 1438_53572 **Date:** 30 November – 4 December 2026 **Location:** Milan **Fees:** 7200 GBP

Turbine Condition Monitoring and Outage Planning is a 1-week training course for turbine maintenance engineers, reliability engineers and planners, built around a turbine outage scope from condition evidence that ties every proposed inspection and repair on a gas or steam turbine to a measured trend. Owners now expect outages to be shorter, rarer and justified by data rather than fixed calendars. Jupiter Prime Training delivers this turbine condition monitoring and outage planning course.

Why Turbine Condition Monitoring and Outage Planning Matters Now

Three forces shape turbine maintenance today. Grid and process demands push units to cycle more often, which accelerates thermal fatigue in hot gas paths and steam casings. Online monitoring systems now produce far more data than planners can read, so alarm logic and trending must be set deliberately. Owners and insurers also want inspection intervals defended by evidence. A site that turns condition data into outage scope avoids both premature teardowns and missed failures; one that does not either wastes outage time or meets blade, bearing and combustor damage in service. The course draws on ISO 55001 for asset management and EN 13306 for maintenance terminology.

Who Gains Most from Turbine Condition Monitoring and Outage Planning

- Engineers responsible for gas and steam turbine reliability and life
- Condition monitoring analysts who review vibration, temperature and oil data
- Planners who build outage scopes, schedules and spares lists
- Operations engineers who track heat rate and output degradation
- Inspection staff who carry out borescope and thermographic surveys

A power station, cogeneration plant or petrochemical site gains most when its monitoring analysts and outage planners attend together.

Turbine Condition Monitoring and Outage Planning Capabilities

Participants move from collecting turbine readings to defending which outage tasks those readings justify and which can wait.

- Set vibration and temperature alarm limits from baseline statistics — operator response decisions
- Interpret shaft orbit, phase and spectrum changes — bearing, rub and unbalance diagnosis
- Assess performance degradation from heat rate and compressor efficiency — washing and overhaul timing
- Apply borescope and thermography findings to hot section life — inspection interval choices
- Build an outage scope linked to condition evidence — owners and outage managers

- Weigh run-on risk against outage cost — deferral decisions

Key Turbine Condition Monitoring and Outage Planning Terms

- Shaft orbit — the path traced by the shaft centre within its bearing, used to diagnose rubs and instability.
- Equivalent operating hours — a count that weights starts and trips more heavily than steady running to estimate hot section wear.
- Heat rate — the fuel energy needed per unit of electricity, rising as a turbine degrades.
- Borescope inspection — a visual check of internal blades and combustors through access ports without opening the casing.
- Alarm deadband — the margin that stops an alarm repeatedly switching on and off near its limit.
- Outage scope — the agreed list of inspections, repairs and replacements to complete during a planned shutdown.

Turbine Condition Monitoring and Outage Planning Day by Day

Day 1: Turbine Failure Modes and Monitoring Strategy

- Gas Turbine Hot Gas Path Failure Modes — Monitoring Priorities
- Steam Turbine Blade, Casing and Valve Damage — Detection Methods
- Equivalent Operating Hours and Start Counting — Life Consumption Tracking
- Monitoring Technique Selection Matrix — Coverage Versus Cost
- Online Versus Periodic Monitoring — Sensor Investment Choices

Day 2: Vibration and Rotor Behaviour

- Proximity Probes and Bearing Housing Sensors — Measurement Choices
- Shaft Orbit, Phase and Spectrum Reading — Fault Signatures
- Start-Up and Coast-Down Plots — Critical Speed Changes
- Baseline Statistics for Alarm Limits — Avoiding Nuisance Alarms
- Rub, Unbalance and Misalignment Diagnosis — Run or Trip Calls

Day 3: Thermal, Oil and Performance Monitoring

- Exhaust Temperature Spread Analysis — Combustor and Burner Problems
- Infrared Thermography of Casings and Joints — Leak and Insulation Faults
- Lube and Control Oil Analysis — Bearing and Servo Health
- Heat Rate and Compressor Efficiency Tracking — Washing Decisions
- Borescope Inspection Findings — Blade Coating and Crack Assessment

Day 4: From Trends to Outage Decisions

- Trend Review Meetings and Exception Reports — Engineer and Planner Alignment
- Inspection Interval Adjustment by Condition — Extending or Shortening Outages
- Run-On Risk Assessment — Deferral Versus Forced Outage Exposure
- Spares and Long-Lead Parts Planning — Outage Readiness
- Outage Duration Estimating — Critical Path for Turbine Work

Day 5: Practising the Turbine Outage Scope from Condition Evidence

- Vibration Case Diagnosis on Sample Data — Applied Orbit and Spectrum Reading
- Performance Degradation Calculation — Applied Heat Rate Tracking
- Alarm Limit Setting Exercise — Applied Baseline Statistics
- Criticality Ranking Under ISO 55001 Principles — Outage Task Priorities
- Turbine Outage Scope from Condition Evidence — Tasks, Triggers and Deferrals

Applying Turbine Condition Monitoring and Outage Planning After the Course

- Recalculate vibration and exhaust spread alarm limits for one turbine from its own baseline statistics.
- Review the next outage scope with planners and tag each task with the condition trend or interval that triggers it.

Turbine Condition Monitoring and Outage Planning Questions FAQ

What is turbine condition monitoring and outage planning and why does it matter now?

It is the use of vibration, thermal, oil and performance data to decide what gas and steam turbine outages should include. Cycling duty and data overload make evidence-based scoping essential.

Which roles gain most from turbine condition monitoring and outage planning?

Turbine maintenance engineers, reliability engineers, monitoring analysts and outage planners gain most, along with operations engineers who track performance.

How does turbine condition monitoring and outage planning differ from a turbomachinery overhaul course?

It focuses on deciding what to open and when. An overhaul course teaches dismantling and rebuild methods, while this one links monitoring trends to outage scope and timing.

What do you bring back from turbine condition monitoring and outage planning?

You bring back an outage scope where each task is tied to a trend or trigger, plus alarm limits built on your own turbine data.

Turbine Condition Monitoring and Outage Planning: The Way Forward

The turbine outage scope from condition evidence first informs which inspections enter the next planned shutdown and which can be deferred. Planners use it to order parts, engineers to defend intervals and managers to approve duration. After the outage, revisit the triggers against what was found inside the machine, since findings sharpen future alarm limits.