CONCEPT

Sustainable Maintenance: Energy-Efficient Asset Care, Circular Spares and Green KPIs

10 – 14 May 2027
Dubai - Five-star CBD venue



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Introduction:

Sustainable maintenance is rarely managed on purpose: steam traps blow through unnoticed, compressed air leaks run for months, refrigerant is topped up instead of repaired, and worn parts are scrapped when they could be rebuilt. Maintenance teams then cannot show how their work affects energy, emissions, water or waste. This Core Concept course trains maintenance and facility teams to find efficiency losses during routine asset care, choose repair, refurbishment or remanufacturing, control lubricants, refrigerants and maintenance waste, and track green KPIs in the CMMS. Participants produce a Sustainable Maintenance Programme and Savings Register for a case site.

Course Objectives:

- Map how maintenance practice drives energy use, emissions, water consumption and waste on a plant or building, and rank assets by their environmental footprint
- Plan energy-centred maintenance tasks for steam traps, compressed air, insulation, motors, drives, pumps, fans, chillers and lighting
- Detect efficiency losses with condition monitoring techniques such as airborne ultrasound, infrared thermography and motor current readings
- Decide between repair, refurbishment, remanufacturing and replacement using life extension criteria and whole-life environmental impact, and set up circular spares pools
- Control lubricants, refrigerants, waste oils and hazardous maintenance waste so that they are recovered, reused or disposed of correctly
- Build sustainability criteria into maintenance contracts and sustainability KPIs into the CMMS, and present a savings business case

Target Audience:

- Maintenance heads who set maintenance strategy and answer for site utility and waste performance
- Reliability engineers who choose maintenance tactics and condition monitoring for rotating and static equipment
- Facility engineers responsible for HVAC, chillers, lighting and building services upkeep
- Maintenance planners and CMMS administrators who define task lists, work order data and asset KPIs
- Sustainability coordinators who need maintenance data for emission and waste reporting
- Contract managers who specify and oversee outsourced maintenance and FM services

Course Outline:

Day 1: Maintenance and the Environmental Footprint of Assets

- Maintenance Impact Map: Energy, Emissions, Water and Waste per Asset Class
- Hidden Losses from Deferred Maintenance: Fouling, Leaks, Misalignment and Degraded Insulation
- Circular Economy Hierarchy for Physical Assets: Maintain, Repair, Refurbish, Remanufacture, Recycle
- Asset Footprint Ranking Using Utility Sub-Meter Data and Run Hours
- Sustainable Maintenance Maturity Checklist for the Current Site

Day 2: Energy-Centred Maintenance Tactics for Utility Systems

- Steam Trap Survey: Mechanical, Thermostatic and Thermodynamic Trap Failure Checks
- Compressed Air Leak Tagging, Repair Routes and Pressure Drop Checks
- Thermal Insulation and Cladding Inspection on Pipework, Valves and Tanks
- Motor, Variable Speed Drive, Pump and Fan Care: Alignment, Belt Tension and Impeller Wear
- Chiller, Cooling Tower, Air Handling Unit and Lighting Tasks That Protect Efficiency

Day 3: Condition Monitoring for Efficiency, Life Extension and Circular Spares

- Airborne Ultrasound Routes for Air, Gas and Steam Leak Detection
- Infrared Thermography and Motor Current Analysis for Efficiency Drift
- Life Extension Assessment: Remaining Useful Life, Refurbishment Scope and Upgrade Options
- Repair, Refurbish, Remanufacture or Replace Matrix with Embodied Carbon and Energy Payback
- Circular Spares Pool: Repairable Rotables, Exchange Units and Supplier Take-Back Terms

Day 4: Lubricants, Refrigerants, Maintenance Waste and Green Contracts

- Environmentally Acceptable Lubricants, Oil Condition Analysis and Drain Interval Extension
- Refrigerant Leak Checks, Recovery Logs and Low-GWP Transition Under the Montreal Protocol and Kigali Amendment
- Waste Oil, Filters, Batteries and Contaminated Rags: Segregation, Labelled Storage and Licensed Disposal
- Sustainability Clauses in Maintenance Contracts: Energy Performance, Waste Returns and Spares Reuse
- Overstated Savings, Rebound Effects and Double Counting: Common Errors in Maintenance Claims

Day 5: Site Walkthrough and the Sustainable Maintenance Programme

- Guided Plant Room Walkthrough: Leak, Trap, Insulation and Refrigerant Findings Log
- CMMS Sustainability KPIs: Energy per Asset, Avoided Emissions, Water Recovered and Waste Diverted
- Savings Register Build with Estimated and Verified Values per Maintenance Action
- Programme Business Case: Payback, Avoided Emissions and Resource Savings
- Sustainable Maintenance Programme Presentation and Peer Challenge

Skills You Will Gain:

- Asset Environmental Footprinting
- Steam and Compressed Air System Care
- Efficiency-Focused Condition Monitoring
- Circular Spares Management
- Refrigerant Stewardship
- Maintenance Waste Segregation
- Green Maintenance Contracting
- CMMS Sustainability Reporting

Why Attend This Course:

- Return with a Sustainable Maintenance Programme and Savings Register for a case site, ready to adapt to your own plant or building
- Turn routine inspections into a source of energy, water and waste savings without waiting for new capital projects
- Give sustainability reporting teams maintenance data they can trust instead of rough estimates
- Compare practice with maintenance and facility peers from manufacturing, utilities, healthcare, hospitality and commercial property

Conclusion:

Maintenance decides how much energy, water and material an asset consumes over its working life. The course moves from mapping the environmental footprint of assets, through energy-centred tasks on steam, compressed air, insulation, motors, pumps, fans, chillers and lighting, to condition monitoring for efficiency drift, life extension and circular spares. It then covers lubricants, refrigerants, maintenance waste, contract criteria and common errors in savings claims. The final day applies these methods in a site walkthrough and produces a Sustainable Maintenance Programme and Savings Register.