
Low-Carbon Maintenance Strategy and Asset Life Extension Training Course

28 December 2026 – 1 January 2027
Dubai - Marriott Hotel Al Jaddaf, Dubai





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Programme Summary

Low-carbon maintenance strategy and asset life extension form the subject of this one-week training course for maintenance and asset leaders at advanced level, ending in a sustainable maintenance roadmap for their site. Maintenance consumes energy, lubricants, spare parts and contractor travel, and poorly maintained equipment leaks, wastes energy and is scrapped early. The approach moves from measuring the footprint of maintenance to reducing losses, extending asset life and embedding environmental indicators in the maintenance strategy. Mars Training Centre UK delivers this programme in low-carbon maintenance strategy.

The Business Case

Environmental targets are set at board level, yet maintenance is rarely given its share. Steam and compressed air leaks, worn seals, fouled exchangers and premature replacement all carry both a cost and an emissions penalty. Managing maintenance as an environmental lever reduces operating cost and defers capital spend.

- Energy Intensity of Operations: Falls as maintenance tasks target the losses that waste steam, air, power and fuel.
- Fugitive and Indirect Emissions: Decline as leak detection and repair and equipment efficiency become planned maintenance work.
- Capital Deferral: Improves as refurbishment and life extension replace like-for-like renewal where the risk case allows.

Principles and Evidence Base

- ISO 55000 and ISO 55001: Asset management principles frame the life extension and renewal decisions in Session 4.
- ISO 50001:2018: Energy baselines and energy performance indicators structure the loss analysis in Session 2.
- ISO 14001:2015: The environmental management system links maintenance aspects and impacts to objectives in Session 1.
- GHG Protocol Corporate Standard and ISO 59004: Scope 1, 2 and 3 accounting and circular economy principles guide the footprint and reuse work in Sessions 1 and 3.



Intended Participants

- Leaders accountable for maintenance strategy, budgets and performance.
- Asset managers who decide between refurbishment and replacement.
- Reliability leaders responsible for equipment efficiency and loss elimination.
- Sustainability leaders who need operational levers for environmental targets.

The programme serves oil and gas, petrochemical, power generation and heavy manufacturing organisations.

Learning Outcomes

1. Participants will be able to quantify the energy, emissions and waste footprint of a maintenance function.
2. Participants will be able to diagnose equipment losses that maintenance can recover, from leaks to fouling and misalignment.
3. Participants will be able to evaluate repair, refurbishment and remanufacture options against replacement.
4. Participants will be able to construct an asset life extension case using remaining useful life, risk and whole-life cost.
5. Participants will be able to design sustainability indicators for the maintenance scorecard.
6. Participants will be able to justify a sustainable maintenance roadmap to executive and sustainability sponsors.

Programme Structure

Day 1: The Footprint of Maintenance

Where does maintenance create energy use, emissions and waste?

- Maintenance Environmental Aspects and Impacts Register
- Scope 1, 2 and 3 Emissions Linked to Maintenance Activity
- Lubricant, Spare Parts and Packaging Waste Streams
- Contractor, Logistics and Shutdown Footprint
- Baseline Footprint of a Maintenance Department

Day 2: Energy Losses and Leak Control

Which equipment losses can planned maintenance recover?

- Energy Baselines and Energy Performance Indicators
- Steam Trap, Compressed Air and Insulation Loss Surveys
- Leak Detection and Repair for Fugitive Emissions
- Efficiency Losses From Fouling, Misalignment and Imbalance
- Prioritising Loss Recovery by Energy and Emissions Value



Day 3: Circular Maintenance and Resource Efficiency

How can parts, lubricants and materials stay in use longer?

- Repair, Refurbish and Remanufacture Hierarchy
- Oil Analysis and Condition-Based Lubricant Drain Intervals
- Spare Parts Reuse, Repairable Pools and Obsolescence
- Supplier Take-Back and Remanufactured Component Sourcing
- Waste Segregation and Hazardous Waste Handling in Workshops

Day 4: Asset Life Extension Decisions

When is extending an asset's life the better environmental and financial choice?

- Remaining Useful Life Assessment and Condition Evidence
- Life Extension Risk Review and Integrity Limits
- Whole-Life Cost and Embodied Carbon Comparison
- Upgrade and Retrofit Options for Efficiency
- Asset Renewal Planning Under ISO 55001

Day 5: Building the Low-Carbon Maintenance Roadmap

Is the sustainable maintenance roadmap ready for approval?

- Applying the Day 1 Baseline to Set Reduction Targets
- Converting Day 2 and Day 3 Findings Into Maintenance Tasks
- Sustainability Indicators in the Maintenance Scorecard
- Reporting Maintenance Contributions to Environmental Objectives
- Sustainable Maintenance Roadmap Completion

Methodology

The programme is built around a data workshop. Participants work with data from a fictional refinery utility system and a manufacturing site, including energy records, leak surveys, waste logs and condition reports. Each step is then repeated for the participant's own site.

- Suggested activity: Building a maintenance footprint baseline from sample work order and energy data.
- Suggested activity: Ranking twenty recorded leaks and losses by recoverable energy and emissions.
- Suggested activity: Comparing life extension with replacement for an ageing pump train.



Capstone Output

Each participant completes a sustainable maintenance roadmap for their site. It contains the maintenance footprint baseline, ranked loss recovery projects, circular practices for parts and lubricants, life extension candidates and a set of scorecard indicators with targets. It is used to secure budget and to report maintenance contributions to environmental objectives.

Frequently Asked Questions

Is low-carbon maintenance training suitable for maintenance directors without a sustainability background?

Yes. It is set at advanced level, assumes experience of maintenance planning and introduces emissions accounting from first principles.

Which standards does the low-carbon maintenance strategy programme rest on?

It rests on ISO 55000 and ISO 55001 for asset management, ISO 50001:2018 for energy performance, ISO 14001:2015 for environmental management, the GHG Protocol for emissions and ISO 59004 for circular economy principles.

How is the sustainable maintenance roadmap used at work?

You can use it to set reduction targets for the maintenance function, secure funding for loss recovery projects and report progress against environmental objectives.

How does low-carbon maintenance strategy differ from a course on energy efficiency and carbon management?

Energy and carbon courses address organisation-wide plans. This programme addresses what maintenance itself controls: losses, leaks, parts, lubricants and asset life.