

Course No. 1296

Asset Lifecycle Management Training Course

RELIABILITY & ASSET MANAGEMENT
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Asset Lifecycle Management Training Course provides a comprehensive and practical framework for managing assets throughout their complete lifecycle, from needs identification and planning through design, procurement, commissioning, operation, maintenance, renewal, and retirement. The course focuses on achieving an effective balance between asset performance, cost, risk, reliability, and organizational objectives while supporting long-term operational and strategic decision-making.

Asset lifecycle management is essential for organizations that depend on equipment, facilities, infrastructure, and operational assets to deliver their services and business objectives. Decisions made during the early stages of an asset's lifecycle can significantly influence maintenance requirements, reliability, operating costs, resource consumption, risks, and long-term performance. Effective asset management therefore requires an integrated perspective that extends beyond maintenance to the complete lifecycle of each asset.

The course covers the core principles of asset lifecycle management, asset requirements planning, lifecycle planning, asset engineering, procurement and delivery, commissioning and handover, operations, maintenance, condition management, risk management, performance optimization, asset renewal, and retirement. It also examines the relationship between asset management, maintenance management, reliability engineering, asset integrity, risk management, financial planning, and investment decisions.

The program emphasizes data-driven and risk-based decision-making and the application of lifecycle cost principles. Participants will learn how to assess asset performance, identify critical assets, evaluate lifecycle costs, develop maintenance and renewal strategies, manage asset obsolescence, optimize resources, and connect technical plans with financial and operational outcomes. This approach supports sustainable asset performance, improved reliability, more effective investment decisions, and stronger long-term asset value.

Objectives

- Analyze the fundamental principles of Asset Lifecycle Management and their relationship with organizational performance and strategy during the course.
- Identify the major lifecycle stages of an asset and the key management decisions associated

with each stage.

- Evaluate asset requirements and align asset specifications and capabilities with operational and strategic needs.
- Apply lifecycle cost and total cost of ownership principles when evaluating asset alternatives and investment decisions.
- Assess asset criticality based on operational performance, risk, financial impact, and business consequences.
- Develop asset management strategies covering design, procurement, commissioning, operation, maintenance, renewal, and retirement.
- Analyze asset performance, condition, reliability, and maintenance data to support lifecycle decisions.
- Apply risk management principles to identify asset lifecycle risks and establish appropriate control measures.
- Strengthen coordination between engineering, projects, procurement, operations, maintenance, finance, and asset management teams.
- Evaluate asset renewal, refurbishment, replacement, and retirement decisions based on condition, risk, cost, and expected performance.
- Develop appropriate performance indicators for measuring Asset Lifecycle Management effectiveness and continuous improvement.
- Prepare an integrated lifecycle management plan for a selected asset or asset group by the end of the course.

Who Should Attend

The Asset Lifecycle Management Training Course is designed for professionals and managers responsible for asset management, engineering, maintenance, reliability, operations, projects, infrastructure, and asset integrity. It is particularly suitable for asset managers, maintenance managers, reliability managers, asset management engineers, maintenance engineers, reliability engineers, project engineers, facilities engineers, asset integrity professionals, and specialists responsible for equipment and infrastructure performance.

The course is also relevant to operations and production managers, engineering managers, project managers, procurement and supply chain professionals, finance professionals, maintenance planners, supervisors, and specialists involved in asset planning, design, procurement, commissioning, operation, maintenance, condition assessment, renewal, and replacement.

Executives, asset owners, technical authorities, and decision makers can benefit from developing an integrated perspective that connects technical asset decisions with financial, operational, and risk outcomes. The course also supports multidisciplinary teams in establishing consistent approaches to asset lifecycle decisions, improving long-term planning, and prioritizing investments, maintenance, renewal, and replacement based on asset performance, risk, and lifecycle cost.

Learning Outcomes

- Explain the concept of Asset Lifecycle Management and its major stages and relationship with organizational objectives.
- Identify the key activities and decisions required at each stage of an asset's lifecycle.
- Evaluate asset requirements and align asset specifications and expected performance with operational needs.
- Apply lifecycle cost and total cost of ownership principles when evaluating asset alternatives.
- Identify critical assets and prioritize them according to risk, operational impact, financial consequences, and business importance.
- Evaluate asset condition, performance, and reliability to support maintenance, improvement, investment, and renewal decisions.
- Develop appropriate asset management strategies throughout the operational and maintenance stages.
- Analyze asset obsolescence risks and determine future renewal and replacement requirements.
- Use asset, maintenance, reliability, and performance data to support lifecycle decision-making.
- Develop performance indicators for measuring asset lifecycle effectiveness and value.
- Prepare improvement plans designed to enhance asset performance, reduce risk, and optimize resource utilization.
- Develop an integrated lifecycle management plan covering planning, design, procurement, commissioning, operation, maintenance, renewal, and retirement.

Course Outline

DAY 01

Fundamentals of Asset Lifecycle Management and Strategic Planning

- Introduction to Asset Lifecycle Management and its objectives.
- Relationship between asset management and organizational strategy.
- Asset lifecycle stages from planning through retirement.
- Industrial, operational, infrastructure, and facility asset categories.
- Identifying asset requirements and stakeholder expectations.
- Aligning asset specifications with operational and business objectives.
- Asset governance, roles, responsibilities, and decision-making structures.
- Identification and classification of critical assets.
- Principles of asset lifecycle risk management.
- Relationship between asset management, maintenance, reliability, and asset integrity.
- Asset data requirements for effective lifecycle decision-making.

PRACTICAL APPLICATION

Develop an asset lifecycle map for a selected industrial asset and identify the major decisions and activities required at each lifecycle stage.

DAY 02

Asset Planning, Design, Procurement, and Handover

- Asset planning and alignment with projects and investment requirements.
- Defining asset performance, reliability, availability, and maintainability requirements.
- Lifecycle considerations during asset design.
- Selection of materials, equipment, and components based on lifecycle requirements.
- Operability, maintainability, accessibility, and serviceability considerations.
- Reliability and maintainability principles during the design stage.
- Evaluation of technical and economic alternatives.
- Lifecycle cost and total cost of ownership analysis.

DAY 02 — CONTINUED

- Procurement management and equipment specifications from a lifecycle perspective.
- Technical documentation and asset information requirements at handover.
- Commissioning, startup, handover, and transfer of knowledge to operations and maintenance teams.

PRACTICAL APPLICATION

Evaluate two alternative asset designs or procurement options using expected performance, risk, lifecycle cost, and operational requirements.

DAY 03

Operations, Maintenance, Reliability, and Condition Management

- Managing assets throughout the operational lifecycle.
- Development of maintenance strategies based on asset condition and criticality.
- Preventive, predictive, and condition-based maintenance.
- Reliability management and asset performance analysis.
- Condition monitoring and early detection of asset degradation.
- Using operational and maintenance data to support lifecycle decisions.
- Failure management, root cause analysis, and lessons learned.
- Spare parts and resource management throughout the asset lifecycle.
- Improving operational performance, energy efficiency, and resource utilization.
- Technical change management and its impact on asset lifecycle performance.
- Integration of asset and maintenance data within asset management systems.

PRACTICAL APPLICATION

Analyze the performance data of a selected industrial asset and identify opportunities to improve maintenance, reliability, and operational performance.

DAY 04

Lifecycle Risk, Cost, Renewal, and Replacement Decisions

- Identification and analysis of asset lifecycle risks.
- Evaluation of failure probability and operational and financial consequences.
- Asset prioritization based on risk and criticality.
- Lifecycle cost analysis for existing assets.
- Evaluation of operating, maintenance, repair, and refurbishment costs.
- Equipment and component obsolescence assessment.
- Managing risks associated with aging and obsolete assets.
- Identifying indicators for asset renewal and replacement.
- Comparison of repair, refurbishment, renewal, and replacement options.
- Evaluation of financial and operational impacts of asset replacement decisions.
- Development of long-term asset renewal and investment plans.

PRACTICAL APPLICATION

Conduct a lifecycle decision analysis to determine whether a selected asset should remain in service, be repaired, refurbished, renewed, or replaced based on risk, cost, condition, and expected performance.

DAY 05

Lifecycle Optimization, Governance, and Performance Management

- Developing an integrated Asset Lifecycle Management framework.
- Establishing asset lifecycle policies, procedures, and governance requirements.
- Developing key performance indicators for asset lifecycle management.
- Measuring technical, financial, operational, and reliability performance.
- Aligning asset performance indicators with organizational objectives.
- Developing continuous improvement plans for asset management.
- Asset information, data quality, and lifecycle information management.
- Using asset analytics to support lifecycle decisions.

DAY 05 — CONTINUED

- Improving coordination between engineering, projects, procurement, finance, operations, and maintenance.
- Knowledge management and lessons learned across the asset lifecycle.
- Planning asset retirement, disposal, decommissioning, and end-of-life activities.

FINAL WORKSHOP

Develop a comprehensive Asset Lifecycle Management plan for a selected asset, covering needs identification, design and procurement requirements, commissioning and handover, maintenance and reliability strategy, condition and risk assessment, lifecycle cost analysis, renewal or replacement planning, performance indicators, governance requirements, and continuous improvement actions.

Register or Request More Information

Course page: <https://quest-training.com/courses/asset-lifecycle-management-training-course>

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