

ENERGY & UTILITIES SECTOR: MAINTENANCE STRATEGIES FOR OPTIMAL PERFORMANCE

“Enhancing Reliability, Reducing Downtime, and Extending Asset Life in Energy Infrastructure”

Schedule

Date	Venue	Fees (Face-to-Face)
14 - 18 Sep 2026	Singapore	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

In the energy and utilities sector, maintenance is mission-critical to ensuring safety, regulatory compliance, continuous service delivery, and return on capital investment. Unplanned downtime and asset failures can lead to massive operational and reputational costs. To avoid this, maintenance strategies must evolve from reactive fixes to proactive and optimized interventions.

This practical, industry-focused course delivers a comprehensive overview of advanced maintenance strategies tailored for the energy and utilities environment. Participants will learn how to build reliability-centered maintenance programs, implement predictive techniques, and drive performance using risk-based approaches.

Objectives

By the end of this course, participants will be able to:

- Select and apply the right maintenance strategy (preventive, predictive, reliability-centered)
- Prioritize assets based on criticality and risk impact
- Use condition-based maintenance and performance monitoring tools
- Reduce failure rates and optimize maintenance resource allocation
- Align maintenance activities with organizational, safety, and sustainability goals

Why Attend

- Understand the latest maintenance trends in power generation, transmission, and utilities infrastructure
- Learn how to implement practical strategies for uptime and asset longevity
- Reduce reactive maintenance and increase planning efficiency
- Gain tools for maintenance audits, optimization, and reliability analysis
- Build the business case for investment in predictive and digital maintenance technologies

Target Audience

This program is designed for:

- Maintenance managers, engineers, and supervisors in energy/utilities
- Asset management and reliability professionals
- Technical operations leaders in power generation, transmission, or water/wastewater sectors
- CMMS/EAM system users and planners

Individual Benefits

Key competencies that will be developed include:

- Risk-based maintenance strategy development
- Asset criticality ranking and prioritization
- Root cause analysis and failure prevention
- Performance metrics (MTBF, availability, OEE) application
- Understanding of industry-specific safety and compliance requirements

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Lower unplanned downtime and maintenance costs
- Improved service reliability and regulatory compliance
- Better alignment of maintenance with production and safety priorities
- Data-driven decision-making in asset care
- Higher overall equipment effectiveness (OEE) and lifecycle value

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - Sector-specific frameworks and maintenance models
- Case Studies - Real-world applications from utilities and energy companies
- Workshops - Exercises in failure analysis, maintenance planning, and KPI tracking
- Peer Exchange - Sharing lessons, benchmarking, and collaborative problem-solving
- Tools - Templates for maintenance audits, strategy selection, and criticality analysis

Course Outline

DETAILED 5-DAY COURSE OUTLINE

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Strategic Maintenance Planning in Energy & Utilities

- Module 1: The Role of Maintenance in Critical Infrastructure (07:30 – 09:30) • Overview of maintenance types and functions • Sector-specific regulatory and operational demands
- Module 2: Maintenance Strategy Frameworks (09:45 – 11:15) • Time-based, usage-based, predictive, and RCM approaches • Key considerations in the energy/utilities environment
- Module 3: Workshop – Strategy Selection Matrix (11:30 – 01:00) • Applying strategy selection to your plant or grid system
- Module 4: Group Exercise – Failure Mode Review (02:00 – 03:30) • Discussing root causes of common outages

Day 2: Asset Criticality & Reliability Modeling

- Module 1: Criticality Analysis and Risk Assessment (07:30 – 09:30) • Ranking assets by business, safety, and environmental impact • Building a criticality matrix
- Module 2: Reliability-Centered Maintenance (RCM) (09:45 – 11:15) • Identifying failure modes and maintenance tasks • Implementing RCM in field settings
- Module 3: Workshop – Develop an RCM Case (11:30 – 01:00) • Drafting RCM plans for selected systems
- Module 4: Peer Exchange – RCM Best Practices (02:00 – 03:30) • Review of different applications and lessons

Day 3: Performance Monitoring & Predictive Tools

- Module 1: CMMS and Data Utilization (07:30 – 09:30) • Effective use of maintenance management software • Integrating inspection, history, and analytics
- Module 2: Condition Monitoring Techniques (09:45 – 11:15) • Vibration, thermography, ultrasound, oil analysis • Determining thresholds and inspection cycles
- Module 3: Workshop – Predictive Maintenance Planning (11:30 – 01:00) • Design a PdM approach for a real plant scenario
- Module 4: KPI Dashboarding & Reporting (02:00 – 03:30) • Tracking MTBF, availability, downtime, work orders

Day 4: Cost, Safety, and Sustainability Considerations

- Module 1: Maintenance Cost Management (07:30 – 09:30) • Budgeting, cost tracking, and variance analysis • Lifecycle cost considerations
- Module 2: Compliance and Safety Integration (09:45 – 11:15) • Aligning maintenance with HSE standards and audits • Shutdown and lockout/tagout planning
- Module 3: Energy Efficiency through Maintenance (11:30 – 01:00) • Reducing losses and leakages • Supporting environmental and ESG objectives
- Module 4: Workshop – Cost vs. Risk Modeling (02:00 – 03:30) • Making trade-off decisions with real data

Day 5: Implementation Roadmap & Case Studies

- Module 1: Building a Maintenance Optimization Plan (07:30 – 09:30) • Steps to implement optimized strategies plant-wide • Integrating departments and processes
- Module 2: Case Studies in Utilities Excellence (09:45 – 11:15) • Examples from water, power, and renewables sectors
- Module 3: Final Group Presentations (11:30 – 01:00) • Teams present maintenance improvement plans
- Module 4: Wrap-Up & Personal Action Planning (02:00 – 03:30) • Course review, evaluation, and next steps

Certification

Participants will receive a Certificate of Completion in Maintenance Strategies for Optimal Performance – Energy & Utilities Sector, validating their capability to enhance maintenance systems that improve reliability, reduce risk, and deliver measurable results in critical infrastructure.

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