MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

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DESIGN PLANNING & PROBLEM DIAGNOSTIC STRATEGY

"Enhancing Engineering Design Efficiency through Structured Planning, Risk Analysis, and Failure Diagnostics"

Schedule

Date	Venue	Fees
23 – 27 Feb 2026	Kuala Lumpur, Malaysia	USD 3495 per delegate
11 – 15 May 2026	Kuala Lumpur, Malaysia	USD 3495 per delegate

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

Introduction

In today's high-performance industrial and engineering environments, poor design planning or inadequate problem diagnostics can result in costly rework, delays, and operational risks. This 5-day training provides engineering, technical, and design professionals with a robust framework for proactive design planning and systematic problem diagnosis, ensuring higher reliability, optimized cost, and reduced lifecycle risk.

Participants will learn how to structure the design planning process, foresee and prevent failure modes, and apply advanced diagnostic techniques for root cause identification and corrective action. Practical workshops, simulations, and real-life design case studies will be central to this experience.

Objectives

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

- Develop structured, cross-functional design plans with clear deliverables
- Identify and prevent design risks through early-stage analysis
- Apply advanced problem diagnostic tools for engineering failures
- Integrate reliability, maintainability, and safety considerations in design
- Improve design documentation, decision-making, and problem resolution efficiency

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Why Attend

- Build a preventive design culture using structured planning and failure analysis
- Improve coordination between design, maintenance, and operations
- Identify design flaws early and avoid costly downstream modifications
- Learn proven methodologies such as FMEA, RCA, and system diagnostics
- Improve root cause accuracy and reduce recurring issues in projects

Target Audience

This program is designed for:

- Design and project engineers
- Mechanical and systems engineers
- Engineering managers and technical team leads
- Reliability and maintenance engineers
- Professionals involved in product, system, or process design

Individual Benefits

Key competencies that will be developed include:

- Structured planning and design thinking for complex systems
- Failure prediction and diagnostic strategy development
- Advanced use of tools such as FMEA, Fault Tree, and Root Cause Analysis
- Risk-based prioritization and issue resolution planning
- Improved cross-functional collaboration and communication

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Reduced design errors and project overruns
- Improved diagnostic response and problem-solving capability
- Increased product or system uptime and lifecycle performance
- More efficient integration of maintenance and operations feedback into design
- Higher consistency and accountability in design and problem resolution processes

Instructional Methodology

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

- Strategy Briefings – Design planning frameworks, diagnostic tools, and decision analysis
- Case Studies – Engineering project breakdowns, failure patterns, and lessons learned
- Workshops – Simulations on failure scenarios, risk evaluation, and design improvement
- Peer Exchange – Cross-functional group dialogue and knowledge sharing
- Tools – Design checklists, FMEA templates, diagnostic flowcharts, and action tracking models

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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: Design Planning Fundamentals

- Module 1: Introduction to Structured Design Planning (07:30 – 09:30) • Importance of front-end planning and early-stage analysis • Design planning lifecycle and phase reviews • Identifying key design deliverables
- Module 2: Scope Definition and Cross-Functional Alignment (09:45 – 11:15) • Defining design objectives, boundaries, and constraints • Integrating maintenance, operations, and stakeholder input • Design feasibility and validation checkpoints
- Module 3: Tools for Design Control and Change Management (11:30 – 01:00) • Planning tools: Gantt charts, matrices, design logs • Managing design changes and revision control • Documenting decisions and rationale
- Module 4: Workshop – Design Plan Structure (02:00 – 03:30) • Participants create a structured design planning map

Day 2: Risk-Based Design and Failure Prevention

- Module 1: Identifying Design Risks and Vulnerabilities (07:30 – 09:30) • Sources of design failure: load, materials, system integration • Failure prediction using field data and experience • Design risk registers and ranking systems
- Module 2: Failure Mode and Effects Analysis (FMEA) (09:45 – 11:15) • How to conduct FMEA for design reliability • Risk Priority Number (RPN) calculation and response planning • Linking FMEA to design improvements
- Module 3: Safety and Reliability in Design (11:30 – 01:00) • Designing for safety and maintainability • Integration of hazard analysis and design codes • Creating design checklists and compliance reports
- Module 4: Workshop – FMEA for Key Design Components (02:00 – 03:30) • Teams apply FMEA to a selected system or sub-system

Day 3: Problem Diagnostic Tools and Techniques

- Module 1: Root Cause Analysis (RCA) Overview (07:30 – 09:30) • Differences between symptoms and root causes • RCA frameworks: 5 Whys, Fishbone, and Barrier Analysis • Data collection for accurate diagnosis
- Module 2: Fault Tree Analysis (FTA) and System Logic (09:45 – 11:15) • Mapping logical failure chains using FTA • Probability and consequence assessment • Identifying single points of failure
- Module 3: Data-Driven Diagnosis and Reporting (11:30 – 01:00) • Using sensor and field data for diagnostics • Logging diagnostics and tracking recurring problems • Standardizing corrective action workflows
- Module 4: Workshop – Build a Diagnostic Strategy (02:00 – 03:30) • Participants create a step-by-step strategy for a known problem

Day 4: Design Decision-Making and Trade-Offs

- Module 1: Design Evaluation Criteria and Metrics (07:30 – 09:30) • Cost, reliability, maintainability, and manufacturability trade-offs • Using weighted decision matrices • Lifecycle cost impact of design choices
- Module 2: Simulation and Scenario Testing (09:45 – 11:15) • Validating designs with worst-case conditions • Using decision trees and Monte Carlo simulations • Case-based decision model application
- Module 3: Improving Diagnostic Agility (11:30 – 01:00) • Real-time fault tracing and remote diagnostic tools • Modular designs for quicker issue localization • Building learning loops from failure data
- Module 4: Workshop – Multi-Criteria Design Decision (02:00 – 03:30) • Teams evaluate a design decision with 3 alternative options

Day 5: Implementation, Integration, and Continuous Improvement

- Module 1: Aligning Design with Operations and Maintenance (07:30 – 09:30) • Design reviews with maintenance and operations feedback • Post-commissioning diagnostics and support planning • Documenting knowledge for future designs
- Module 2: Continuous Improvement in Design Processes (09:45 – 11:15) • Kaizen, PDCA, and A3 thinking in engineering design • Capturing lessons learned and applying corrective actions • Design performance tracking
- Module 3: Final Project Review and Presentation (11:30 – 01:00) • Teams present integrated planning and diagnostics strategy • Peer and instructor feedback
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Module 4: Closing Workshop – 90-Day Implementation Plan (02:00 – 03:30) • Individual action planning for application in current roles • Wrap-up, Q&A, and course close

Certification

Participants will receive a Certificate of Completion in Design Planning & Problem Diagnostic Strategy, confirming their competence in structured planning, failure diagnostics, and design optimization practices.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation's unique goals.

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