

ADVANCED ROOT CAUSE FAILURE ANALYSIS FOR POWER GENERATION PLANTS

“Preventing Recurring Failures and Enhancing Reliability in Power Generation Assets”

Schedule

Date	Venue	Fees (Face-to-Face)
05 - 09 Oct 2026	Singapore	USD 3,495 per delegate

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

Introduction

Power generation plants operate complex and high-value assets where failures can result in significant financial losses, safety risks, and supply disruptions. Effective Root Cause Failure Analysis (RCFA) is essential to identify underlying technical, human, and systemic causes of failures and to prevent their recurrence.

This intensive 5-day training provides participants with advanced RCFA methodologies specifically tailored for power generation environments. The program focuses on practical failure analysis of turbines, generators, boilers, transformers, and balance-of-plant systems, enabling participants to drive reliability improvements and sustainable operational excellence.

Objectives

- By the end of this course, participants will be able to:
- Apply advanced RCFA methodologies in power generation contexts
 - Identify recurring failure patterns in power plant equipment
 - Analyze technical, human, and organizational failure causes
 - Facilitate structured failure investigations
 - Develop effective corrective and preventive actions
 - Improve plant reliability, availability, and performance
 - Support continuous improvement and learning culture

Why Attend

- Eliminate recurring failures in power generation assets
- Enhance reliability and availability of critical equipment
- Improve safety and risk management
- Strengthen analytical and investigation skills
- Learn from real-world power plant failure cases
- Support regulatory compliance and operational excellence

Target Audience

This program is designed for:

- Power plant maintenance and reliability engineers
- Operations and production engineers
- Asset and engineering managers
- Electrical and mechanical engineers
- HSE and safety professionals
- Technical supervisors in power generation facilities

Individual Benefits

Key competencies that will be developed include:

- Advanced failure analysis and troubleshooting skills
- Ability to lead and participate in RCFA investigations
- Improved technical decision-making
- Enhanced cross-functional collaboration skills
- Increased confidence in handling complex plant failures

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Reduced unplanned outages and forced shutdowns
- Improved plant reliability and availability
- Lower maintenance and repair costs
- Enhanced safety and operational stability
- Stronger continuous improvement and learning culture

Instructional Methodology

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

- Strategy Briefings – Advanced RCFA frameworks and methodologies
- Case Studies – Power plant-specific failure investigations
- Workshops – Hands-on failure analysis exercises
- Peer Exchange – Group discussions on plant reliability challenges
- Tools – RCFA templates, investigation checklists, and action tracking tools

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: RCFA Fundamentals for Power Generation

- Introduction to RCFA principles and power plant reliability
- Failure classification and data collection
- Overview of power generation equipment and systems

Day 2: Failure Analysis of Mechanical & Electrical Systems

- Turbines, generators, and auxiliary systems
- Transformers, switchgear, and electrical protection
- Common failure modes and degradation mechanisms

Day 3: Advanced RCFA Tools & Techniques

- Fault tree analysis and cause mapping
- Human and organizational factors analysis
- Evidence validation and hypothesis testing

Day 4: Developing Corrective & Preventive Actions

- Risk-based corrective action development
- Implementation planning and accountability
- Monitoring effectiveness and performance indicators

Day 5: Sustaining Reliability & Continuous Improvement

- Preventing recurrence and knowledge management
- Building RCFA capability and culture
- Integrating RCFA with maintenance and asset management

Certification

Participants will receive a Certificate of Completion in Advanced Root Cause Failure Analysis for Power Generation Plants, validating their advanced competence in investigating failures and implementing sustainable reliability improvements within power generation facilities.

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