

RISK RELIABILITY MANAGEMENT



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Introduction

Risk Reliability Management Training Course equips professionals to keep critical assets and operations dependable while controlling the risks that threaten them. Participants learn how to identify failure modes, assess risk, set reliability targets, and build maintenance and control systems that prevent costly disruption. The program combines reliability engineering methods with enterprise risk frameworks and practical assurance techniques. As a result, learners gain a structured way to reduce downtime, protect safety, and justify investment in reliability. Furthermore, the course strengthens data analysis, root-cause investigation, and risk-based decision-making.

Risk Reliability Management Course Objectives

- Apply reliability engineering concepts: MTBF, MTTR, availability, and reliability growth.
- Conduct failure mode and effects analysis (FMEA) and failure mode, effects, and criticality analysis (FMECA).
- Use fault tree analysis (FTA) and root cause analysis (RCA) for failure investigation.
- Apply reliability-centred maintenance (RCM) to prioritize maintenance tasks.
- Build risk registers with likelihood, impact, and risk matrices.
- Apply ISO 31000 risk management principles and ISO 55000 asset management concepts.
- Design preventive, predictive, and condition-based maintenance programs.
- Use statistical analysis, Weibull analysis, and reliability data collection.
- Set key risk indicators (KRIs) and reliability KPIs with baselines and targets.
- Embed controls, assurance, and continuous improvement into reliability systems.

Course Methodology

- Interactive sessions built on real asset failure and risk cases.
- Workshops on FMEA, fault tree analysis, and risk register construction.

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- Hands-on practice with RCM decision tools and maintenance strategy design.
- Data analysis exercises using reliability metrics and Weibull plots.
- Simulation of root cause investigations and corrective action planning.
- Facilitator feedback and peer review on reliability improvement plans.

Who Should Take This Course

- Reliability, maintenance, and asset management engineers.
- Risk managers and internal control specialists.
- Operations and plant managers in industrial settings.
- HSE and quality professionals managing critical assets.
- Facility and infrastructure managers responsible for uptime.
- Consultants and auditors supporting reliability and risk programs.

Risk Reliability Management Course Outlines

Day 1: Reliability Foundations and Asset Management

- Core reliability concepts: reliability, availability, maintainability, and safety.
- Key metrics: MTBF, MTTR, failure rate, and OEE.
- Asset management principles and ISO 55000 concepts.
- Asset criticality ranking and lifecycle costing.
- Reliability culture and organizational roles.
- Cost of failure versus cost of prevention.
- Case study: diagnosing poor reliability in an operating plant.

Day 2: Risk Identification and Assessment



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- Risk management principles and the ISO 31000 framework.
- Risk identification techniques: checklists, HAZOP, and what-if analysis.
- Risk matrices, likelihood, and impact scoring.
- Building and maintaining risk registers.
- Bow-tie analysis for major hazards.
- Risk appetite, tolerances, and escalation thresholds.
- Workshop: constructing a risk register for critical assets.

Day 3: Failure Analysis and Root Cause Investigation

- Failure mode and effects analysis (FMEA) and FMECA.
- Fault tree analysis (FTA) and event tree analysis.
- Root cause analysis (RCA) methods: 5 Whys and fishbone diagrams.
- Failure reporting, analysis, and corrective action systems (FRACAS).
- Human factors and organizational causes of failure.
- Corrective and preventive action (CAPA) tracking.
- Exercise: leading a root cause investigation.

Day 4: Maintenance Strategy and Reliability Improvement

- Reliability-centred maintenance (RCM) and decision logic.
- Preventive, predictive, and condition-based maintenance.
- Condition monitoring: vibration, thermography, and oil analysis.
- Total productive maintenance (TPM) and operator care.
- Spare parts strategy and critical spares management.
- Reliability growth and improvement planning.





- Simulation: redesigning a maintenance strategy.

Day 5: Reliability Data, KPIs, and Assurance

- Reliability data collection and quality standards.
- Weibull analysis and life data interpretation.
- Key risk indicators (KRIs) and reliability KPIs with baselines and targets.
- Dashboards and reporting for reliability performance.
- Internal control, assurance, and audit of reliability systems.
- Continuous improvement and lessons-learned routines.
- Capstone: presenting an integrated risk and reliability plan.

Conclusion

By successfully completing Risk Reliability Management, participants will gain a practical, integrated understanding of how to protect asset performance while managing the risks that threaten it. They will acquire skills in failure analysis, risk assessment, maintenance strategy, and reliability measurement. Gentex Training Center designs the program to help professionals reduce downtime, strengthen controls, and make risk-based decisions with confidence.

FAQs

Q1 What is the "Risk Reliability Management" course about?



It covers how to keep assets and operations dependable while controlling the risks around them. The course spans reliability metrics, risk assessment, failure analysis, maintenance strategy, and reliability measurement, so teams can prevent failures rather than only react to them.

Q2 What are the key benefits of the "Risk Reliability Management" course?

You gain a structured method for reducing downtime and avoiding costly failures. The course improves risk visibility, sharpens failure investigation, supports better maintenance investment decisions, and strengthens internal controls and assurance over critical assets.

Q3 What skills will I gain from the "Risk Reliability Management" course?

You will develop four core skills: reliability assessment and metric analysis, risk identification and assessment with registers and matrices, failure analysis and root cause investigation, and maintenance strategy design with reliability monitoring and assurance.

Q4 What tools, methods, or standards are covered in the "Risk Reliability Management" course?

The course covers FMEA and FMECA, fault tree analysis, event tree analysis, root cause analysis with 5 Whys and fishbone diagrams, FRACAS, reliability-centred maintenance (RCM), total productive maintenance (TPM), condition monitoring, Weibull analysis, MTBF and MTTR metrics, bow-tie analysis, risk registers and matrices, the ISO 31000 risk framework, and ISO 55000 asset management concepts.



Q5 How is the "Risk Reliability Management" course applied in real-world practice?

Participants apply it to real situations such as running a root cause investigation after a breakdown, building a risk register for critical equipment, and redesigning a maintenance plan around failure data. The same methods support asset investment cases, safety reviews, and reliability improvement programs.