

Process Plant Equipment Inspection & Repair Techniques

19 – 30 October 2026
Toronto (Canada)

UK Training

PARTNER



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Ref: 321587_141374 **Date:** 19 – 30 October 2026 **Location:** Toronto (Canada) **Fees:** 11900 GBP

Why This Course

Maintaining the integrity of process plant equipment and connected piping is critical to ensuring operational safety, environmental protection, and production continuity. Failures in pressure vessels, piping systems, storage tanks, or rotating equipment can result in costly downtime and significant risk. A structured, standards-based approach to inspection, evaluation, and repair is therefore essential for sustainable plant performance.

This intensive ten-day program provides a comprehensive and practical understanding of equipment integrity management. Participants will explore internationally recognized codes and standards, advanced inspection technologies, risk-based methodologies, and proven repair strategies. By combining technical depth with real-world applications, the course equips professionals to enhance plant reliability while maintaining compliance and safety.

What You'll Learn and Practice

By attending this program, you will be able to:

- Apply relevant industry codes and standards to equipment inspection and repair.
- Select and implement appropriate inspection techniques for different equipment types.
- Evaluate equipment condition and perform fitness-for-service assessments.
- Plan and oversee effective repair and alteration activities.
- Develop and manage risk-based inspection programs.
- Support informed decision-making throughout the equipment lifecycle.

The Program Flow

Day 1: Introduction to Process Plant Equipment Integrity

- Overview of process plant equipment and piping systems
- The role of integrity management in safety and reliability
- Introduction to key international standards and codes
- Fundamentals of equipment lifecycle management

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Day 2: Inspection Techniques and Tools

- Best practices in visual inspection
- Non-destructive testing NDT methods and applications
- Advanced inspection technologies, including drones and robotics
- Inspection data collection, documentation, and management systems

Day 3: Corrosion and Degradation Mechanisms

- Common corrosion types in process environments
- Material degradation and damage mechanisms
- Corrosion monitoring and detection techniques
- Prevention, mitigation, and control strategies

Day 4: Risk-Based Inspection RBI

- Principles and benefits of risk-based inspection
- RBI methodologies and step-by-step implementation
- Establishing and maintaining an RBI program
- Practical case studies and industry examples

Day 5: Fitness-for-Service FFS Assessment

- Introduction to fitness-for-service concepts
- Overview of API 579 / ASME FFS methodologies
- Evaluating common damage mechanisms
- Applied case studies and calculation examples

Day 6: Piping Inspection and Evaluation

- Piping system components and typical failure modes
- Inspection planning and techniques for piping networks
- Remaining life assessment and condition evaluation
- Flexibility analysis and stress considerations

Day 7: Pressure Vessels and Storage Tanks

- Inspection requirements for pressure vessels
- Storage tank inspection techniques and standards
- Fitness-for-service evaluations for vessels and tanks
- Repair, alteration, and compliance considerations

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A graphic illustration of a chessboard with several chess pieces. A large gold king piece is prominent in the foreground, with a silver pawn and a gold pawn nearby. The background features concentric circles, suggesting a signal or a field of influence.

Day 8: Rotating Equipment Inspection

- Inspection practices for pumps, compressors, and turbines
- Vibration monitoring and analysis fundamentals
- Lubrication system inspection and reliability practices
- Alignment and balancing principles

Day 9: Repair and Alteration Techniques

- Welding repair methods and qualification requirements
- Mechanical repair approaches
- Composite repair technologies for piping and equipment
- Quality assurance and control during repair projects

Day 10: Maintenance Planning and Management

- Developing effective inspection and maintenance strategies
- Shutdown planning and execution best practices
- Root cause analysis of equipment failures
- Continuous improvement in integrity and maintenance programs

Individual Impact

Participants will leave the program with:

- The competence to design and implement risk-based inspection programs.
- Practical ability to perform and interpret fitness-for-service assessments.
- Improved judgment in repair-versus-replacement decisions.
- Stronger technical confidence in managing plant integrity challenges.

Organizational Impact

Organizations will benefit from:

- Reduced risk of equipment failure and unplanned shutdowns.
- Improved compliance with international inspection and repair standards.
- Optimized maintenance planning and resource allocation.
- Enhanced overall plant safety, reliability, and operational efficiency.

A graphic of a chessboard with several chess pieces (king, queen, rook, knight, and pawns) in gold and silver. The board is checkered and has a subtle grid pattern.

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Training Methodology

- Expert-led technical sessions aligned with industry best practices
- Real-world case studies and applied integrity assessment examples
- Workshops on RBI implementation and FFS evaluation
- Group discussions focused on operational challenges and solutions

Beyond the Course

By the end of the ten days, participants will be prepared to:

- Strengthen plant integrity management systems.
- Apply structured inspection and evaluation methodologies.
- Oversee repair and alteration projects with technical confidence.
- Contribute strategically to improving plant reliability and long-term asset performance.

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