

Course No. 1292

Advanced Welding Inspection Training Course

CORROSION, INSPECTION & NDT
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Advanced Welding Inspection Training Course is a specialized professional program designed to develop the technical knowledge and practical inspection skills required to evaluate welding quality and verify compliance with approved specifications, procedures, codes, and project requirements. The course focuses on advanced welding inspection practices before, during, and after welding, including welding procedure review, welder qualification, material verification, process control, visual inspection, non-destructive testing, weld defect assessment, documentation, and final acceptance. These capabilities are essential for organizations where welding quality directly affects equipment reliability, structural integrity, operational safety, and asset lifecycle performance.

Welding is extensively used in the fabrication and installation of pipelines, pressure vessels, storage tanks, steel structures, industrial equipment, power generation facilities, petrochemical plants, manufacturing facilities, and major infrastructure projects. Welding defects, inadequate inspection procedures, poor process control, or failure to comply with approved welding requirements can contribute to premature equipment deterioration, rework, project delays, and operational risks. Advanced welding inspection therefore represents a critical component of quality assurance, asset integrity, and technical risk management.

This course provides a structured and practical understanding of advanced welding inspection requirements, including welding specifications, welding procedure qualification, welder performance qualification, base and filler material inspection, preheating, interpass temperature control, post-weld heat treatment, visual inspection, non-destructive testing, weld discontinuity evaluation, acceptance criteria, repair requirements, and inspection documentation. Participants will learn how to establish effective inspection checkpoints and evaluate welding activities against applicable project requirements and recognized industry practices.

The Advanced Welding Inspection Training Course combines technical instruction with practical workshops, case studies, inspection scenarios, weld defect analysis, and interpretation of inspection results. Participants will develop the ability to identify critical welding defects, assess their causes and significance, interpret inspection and testing reports, determine compliance, manage non-conformities, and support technically sound acceptance or repair decisions. The program helps organizations strengthen welding quality, reduce avoidable rework, improve fabrication control, and support the integrity and reliability of welded assets.

Objectives

- Analyze advanced welding inspection principles and their role in quality assurance and asset integrity.
- Evaluate welding specifications, inspection and test plans, and project requirements before fabrication activities begin.
- Apply systematic welding inspection methodologies before, during, and after welding activities.
- Assess welding procedure qualifications and welder performance qualifications against applicable requirements.
- Analyze welding discontinuities and defects to determine their potential causes, significance, and impact on weld integrity.
- Apply appropriate visual inspection and non-destructive testing methods for different welding applications.
- Evaluate inspection and testing results against specified acceptance criteria.
- Assess preheating, interpass temperature, and post-weld heat treatment requirements during the course.
- Improve welding inspection documentation, non-conformance reporting, corrective actions, and re-inspection processes.
- Strengthen technical decision-making regarding weld acceptance, repair, rejection, and re-inspection.
- Design an integrated welding inspection and quality control approach that supports asset integrity and operational reliability.

Who Should Attend

This course is designed for welding inspectors, quality control inspectors, welding engineers, quality engineers, fabrication engineers, project engineers, materials engineers, inspection engineers, asset integrity engineers, QA/QC professionals, non-destructive testing personnel, welding supervisors, fabrication supervisors, project managers, and technical specialists responsible for welding quality and inspection.

The program is particularly relevant to professionals involved in pipelines, pressure vessels, storage tanks, steel structures, static and rotating equipment, power plants, industrial facilities, petrochemical installations, manufacturing projects, construction projects, maintenance activities, and major fabrication and installation programs. It is also valuable for contractors, subcontractors,

consultants, and technical personnel responsible for reviewing welding documentation, inspection reports, fabrication records, and quality requirements.

Quality managers, inspection managers, project managers, fabrication managers, asset integrity professionals, and decision-makers involved in the technical acceptance of welded equipment and structures can also benefit from the course. The program strengthens their ability to evaluate welding quality, interpret inspection evidence, manage non-conformities, and make informed technical decisions based on specifications, inspection results, and applicable acceptance requirements.

Learning Outcomes

- Explain advanced welding inspection principles and their relationship to quality assurance and asset integrity.
- Review welding specifications, inspection and test plans, drawings, and project requirements.
- Evaluate welding procedures and welder qualification documentation.
- Verify base materials, filler materials, storage conditions, identification, and traceability requirements.
- Inspect welding activities before, during, and after execution against defined inspection checkpoints.
- Identify and classify common surface and internal welding discontinuities and defects.
- Apply appropriate visual inspection techniques and determine when non-destructive testing is required.
- Interpret relevant non-destructive testing reports and evaluate results against applicable acceptance criteria.
- Assess preheating, interpass temperature control, and post-weld heat treatment requirements.
- Prepare professional welding inspection reports, non-conformance reports, corrective actions, and re-inspection records.
- Make technically justified decisions regarding weld acceptance, repair, rejection, and re-inspection.
- Develop an integrated welding inspection and quality control plan for an industrial or construction project.

Course Outline

DAY 01

Advanced Welding Inspection Principles and Quality Requirements

- Role of welding inspection in quality assurance and asset integrity
- Welding processes and their industrial applications
- Review of welding specifications, drawings, and technical requirements
- Inspection and Test Plans, hold points, witness points, and inspection checkpoints

PRACTICAL APPLICATION

Review a welding specification and inspection plan and identify critical quality control points

DAY 02

Welding Procedures, Qualifications, and Material Control

- Welding procedure specifications and qualification requirements
- Welding procedure qualification and qualification testing
- Welder and welding operator performance qualification
- Base material and filler material inspection, identification, storage, and traceability
- Preheating, interpass temperature control, and welding environment requirements

PRACTICAL APPLICATION

Evaluate a welding procedure and qualification record and identify potential non-conformities

DAY 03

Visual Inspection and Non-Destructive Testing

- Principles of advanced visual welding inspection
- Weld dimensions, profiles, alignment, surface condition, and workmanship assessment
- Magnetic Particle Testing and its applications
- Liquid Penetrant Testing and its applications

DAY 03 — CONTINUED

- Ultrasonic Testing and Radiographic Testing principles and interpretation of results

PRACTICAL APPLICATION

Review non-destructive testing results and determine whether the weld meets specified requirements

DAY 04

Welding Defects and Failure Analysis

- Surface and internal welding discontinuities and defect classification
- Porosity, lack of fusion, incomplete penetration, cracking, and slag inclusions
- Undercut, excessive reinforcement, burn-through, distortion, and dimensional defects
- Root cause analysis of welding defects
- Acceptance and rejection criteria, weld repair, and re-inspection requirements

PRACTICAL APPLICATION

Analyze welding defect cases, determine probable causes, and develop appropriate corrective actions

DAY 05

Welding Inspection Management, Quality Assurance, and Final Acceptance

- Developing an integrated welding inspection and testing plan
- Review of welding records, inspection reports, test results, and final documentation
- Non-conformance management, corrective actions, and re-inspection
- Final weld acceptance and verification against project requirements
- Integration of welding inspection, quality assurance, asset integrity, and technical risk management

DAY 05 — CONTINUED

FINAL WORKSHOP

Develop and execute an Advanced Welding Inspection Plan for an industrial project covering welding procedure review, welder qualification, material verification, welding process monitoring, visual inspection, non-destructive testing, defect evaluation, acceptance criteria, repair management, documentation, corrective actions, and final weld acceptance.

Register or Request More Information

Course page: <https://quest-training.com/courses/advanced-welding-inspection-training-course>

Website: <https://quest-training.com>

Email: info@quest-training.com

Phone: +905016771440