

ICTQual AB



Qualification Specification

ICTQual AB Level 1 Diploma in QA/QC Piping & Welding Inspector



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ICTQual AB's

Level 1 Diploma in QA/QC Piping & Welding Inspector

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Qualification Specification about

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About ICTQual AB's

ICTQual AB is a distinguished awarding body based in the United Kingdom, dedicated to fostering excellence in education, training, and skills development. Committed to global standards, ICTQual AB's provides internationally recognized qualifications that empower individuals and organizations to thrive in an increasingly competitive world. Their offerings span diverse industries, including technical fields, health and safety, management, and more, ensuring relevance and adaptability to modern workforce needs.

ICTQual AB's delivers high-quality educational solutions through a network of Approved Training Centres worldwide. Their robust standards and innovative teaching methodologies equip learners with practical knowledge and skills for personal and professional growth. With a mission to inspire lifelong learning and drive positive change, ICTQual AB's continuously evolves its programs to stay ahead of industry trends and technological advancements.

Course Overview

The ICTQual AB Level 1 Diploma in QA/QC Piping & Welding Inspector is a comprehensive foundational qualification designed to serve as a gateway for individuals aspiring to build a career in the critical fields of industrial quality assurance and quality control. As global infrastructure—ranging from oil and gas pipelines to power plant facilities—relies heavily on the integrity of welding and piping systems, the demand for competent quality personnel has never been higher. This programme bridges the gap between general industrial knowledge and the specific, technical requirements of QA/QC inspection. This course is structured to demystify the complex environment of industrial inspection for beginners. It goes beyond simple definitions to explore the practical realities of the job, including the "who, what, and why" of inspection protocols. Learners are introduced to the rigorous standards that govern the industry, gaining an appreciation for how minor defects in piping or welding can lead to major operational failures or safety hazards. By focusing on the fundamental physics of welding processes and the mechanics of piping systems, the curriculum ensures that learners are not just memorizing rules, but understanding the engineering logic behind them.

Aims

The primary aim of this qualification is to build a solid entry-level skill set for learners with little to no prior experience in inspection. It seeks to:

- Provide a comprehensive introduction to the fundamental principles of quality assurance and control within an industrial context.
- Develop an awareness of the critical role inspectors play in preventing operational failures and ensuring project integrity.
- Create a strong knowledge base that supports immediate entry into support roles and facilitates future progression into advanced technical inspection qualifications.

Objectives

Upon successful completion of this course, learners will be able to:

- **Understand Core Concepts:** Demonstrate knowledge of basic welding processes, piping systems, and material identification.
- **Apply Inspection Techniques:** Utilize fundamental visual inspection techniques and industry-standard inspection tools.
- **Identify Defects:** Recognize common defects found in welding and piping operations and understand their implications on quality.
- **Ensure Compliance:** Interpret and follow approved procedures, codes, and quality requirements relevant to specific sectors.
- **Manage Documentation:** Maintain accurate inspection records and understand the importance of proper reporting in QA/QC systems.

Targeted Audience

This diploma is designed for a broad range of aspirants looking to enter the technical inspection field, including:

- **Beginners:** Individuals with no prior technical background seeking a career change into QA/QC.
- **Trainees:** Apprentices or junior staff currently entering the oil, gas, or construction sectors.
- **Support Staff:** Personnel in related roles who require a fundamental understanding of inspection processes to support QA/QC teams.
- **Career Progressors:** Individuals seeking a stepping stone to more advanced QA/QC and inspection certifications.

Certification Framework

Qualification title	ICTQual AB Level 1 Diploma in QA/QC Piping & Welding Inspector
Course ID	QC0079
Total Qualification Time	100 Hours
Guided Learning Hours	50 Hours
Grading Type	Pass / Fail
Competency Evaluation Assessment	Coursework / Assignments / Verifiable Experience The assessment and verification process for ICTQual AB's qualifications involves two key stages: Internal Assessment and Verification: ✓ Conducted by the staff at the Approved Training Centre (ATC) to ensure learners meet the required standards through continuous assessments. ✓ Internal Quality Assurance (IQA) is carried out by the centre's IQA staff to validate the assessment process. External Quality Assurance: ✓ Managed by ICTQual AB's verifiers, who periodically review the centre's assessment and IQA processes. Verifies that assessments are conducted to the required standards and ensures consistency across centres

Entry Requirements

To enrol in ICTQual AB Level 1 Diploma in QA/QC Piping & Welding Inspector, learner must meet the following entry requirements:

- ✓ **Age Requirement:** Learners must be aged 18 years or older at the time of enrolment
- ✓ **Educational Background:** A basic secondary school education or equivalent is recommended. No prior technical qualifications are mandatory, making this course suitable for beginners and entry-level learners.
- ✓ **Industry Exposure:** No previous work experience in piping, welding, or inspection is required. However, basic awareness of industrial, mechanical, or construction environments may be beneficial.
- ✓ **English Language Proficiency:** Learners should have a basic to intermediate level of English to understand course materials, follow instructions, and complete assessments. Reading and writing skills in English are important.

Qualification Structure

This qualification comprises 5 mandatory units. Candidates must successfully complete all mandatory units to achieve the qualification.

Mandatory Units	
Unit Ref#	Unit Title
QC0079-01	Introduction to QA/QC in Piping & Welding Inspection
QC0079-02	Basic Piping & Welding Materials and Tools Overview
QC0079-03	Visual Inspection Techniques for Welds and Joints
QC0079-04	Quality Documentation & Reporting Fundamentals
QC0079-05	Health, Safety & Environmental Awareness in Inspection

Centre Requirements

To ensure quality training delivery, centres must adhere to the following standards:

1. Centre Approval

- ✓ Centres must be formally approved by ICTQual AB's before delivering this qualification.
- ✓ Approval involves a review of facilities, policies, and staff qualifications.

2. Qualified Staff

- ✓ **Tutors:** Must hold a Level 3 or higher qualification (e.g., NVQ Level 3, Higher National Certificate (HNC), Diploma, or Bachelor's degree) in a relevant technical field such as Mechanical Engineering, Welding Engineering, Metallurgy, Material Science, Civil Engineering, or Quality Management.
- ✓ **Assessors:** Must hold a recognized assessor qualification (e.g., CAVA, AVRA) or equivalent)
- ✓ **Internal Quality Assurers (IQAs):** Must hold a recognized IQA qualification (e.g. Level 4 Award in the IQA and Level 4 Certificate in Leading the IQA) and experience to oversee assessment standards.

3. Learning Facilities

Centre must offer:

- ✓ Private study areas and internet-enabled workspaces (for blended or physical delivery)
- ✓ Academic and pastoral support for learners
- ✓ Administrative support must be available to manage enrolment, tracking, and learner queries efficiently

4. Health and Safety Compliance

- ✓ All training facilities must comply with health and safety regulations.
- ✓ Centres must conduct regular risk assessments for practical activities.

5. Learning Resources

- ✓ **Course Materials:** Approved textbooks, study guides, and digital content must align with the qualification standards.
- ✓ **Assessment Tools:** Templates and guidelines must be provided to ensure standardized evaluation processes.
- ✓ **E-Learning Support:** Centres offering online or blended learning must implement an effective Learning Management System (LMS).

6. Assessment and Quality Assurance

- ✓ Centres must ensure assessments meet ICTQual AB's competency standards.
- ✓ Internal quality assurance (IQA) must be conducted to maintain consistency.
- ✓ External verifiers from ICTQual AB's will review assessment and training practices.

7. Learning Support

- ✓ **Qualification Guidance:** Support for coursework and assignments.
- ✓ **Career Pathway Assistance:** Information on progression opportunities in sustainability and energy sectors.
- ✓ **Accessibility Support:** Accommodations for learners with disabilities or language barriers.

8. Policies and Compliance

Centres must uphold the following policies in accordance with ICTQual AB's standards:

- ✓ Equality, Diversity, and Inclusion Policy.
- ✓ Health and Safety Policy.
- ✓ Safeguarding and Learner Protection Policy.
- ✓ Complaints and Appeals Procedure.
- ✓ Data Protection and Confidentiality Policy.

9. Reporting Requirements

- Centres must provide ICTQual AB's with regular reports on learner registrations, progress, and certification outcomes.
- Assessment records must be maintained for external auditing and quality assurance purposes.

Support for Candidates

Centres should ensure that materials developed to support candidates:

- ✓ Facilitate tracking of achievements as candidate's progress through the learning outcomes and assessment criteria.
- ✓ Include information on how and where ICTQual AB's policies and procedures can be accessed.
- ✓ Provide mechanisms for Internal and External Quality Assurance staff to verify and authenticate evidence effectively.

This approach ensures transparency, supports candidates' learning journeys, and upholds quality assurance standards.

Assessment

This qualification is competence-based, requiring candidates to demonstrate proficiency as defined in the qualification units. The assessment evaluates the candidate's skills, knowledge, and understanding against the set standards. Key details include:

1. Assessment Process:

- ✓ Must be conducted by an experienced and qualified assessor.
- ✓ Candidates compile a portfolio of evidence that satisfies all learning outcomes and assessment criteria for each unit.

2. Types of Evidence:

- ✓ Observation reports by the assessor.
- ✓ Assignments, projects, or reports.
- ✓ Professional discussions.
- ✓ Witness testimonies.
- ✓ Candidate-produced work.
- ✓ Worksheets.
- ✓ Records of oral and written questioning.
- ✓ Recognition of Prior Learning (RPL).

3. Learning Outcomes and Assessment Criteria:

- ✓ **Learning Outcomes:** Define what candidates should know, understand, or accomplish upon completing the unit.
- ✓ **Assessment Criteria:** Detail the standards candidates must meet to demonstrate that the learning outcomes have been achieved.

This framework ensures rigorous and consistent evaluation of candidates' competence in line with the qualification's objectives.

Unit Descriptors

QC0079-01- Introduction to QA/QC in Piping & Welding Inspection

This unit introduces the fundamental concepts of Quality Assurance (QA) and Quality Control (QC) within industrial sectors. Learners will explore the distinct roles of a QA/QC inspector, understanding the importance of adherence to international codes and project specifications. It covers the hierarchy of inspection, the necessity of independent verification, and the impact of quality management on project safety and operational longevity.

Learning Outcome:	Assessment Criteria:
1. Understand the basic concepts and purpose of Quality Assurance (QA) and Quality Control (QC) in piping and welding inspection.	1.1 Define Quality Assurance (QA) and Quality Control (QC) using simple, clear language. 1.2 Explain the purpose of QA/QC in preventing problems before they occur in piping and welding work. 1.3 State the difference between checking work before it happens (QA) and checking finished work (QC). 1.4 Describe why QA/QC matters in keeping piping systems safe and working properly.
2. Identify the roles and responsibilities of a QA/QC piping and welding inspector in industrial projects.	2.1 List the main tasks that a QA/QC inspector must do on a piping and welding project. 2.2 Explain what a QA/QC inspector is responsible for checking and reporting. 2.3 Identify who the inspector reports to and why communication is important. 2.4 Describe how an inspector's work affects the quality of the final project.
3. Recognise the importance of standards, codes, and procedures in ensuring quality and compliance.	3.1 Explain what standards and codes are used for in piping and welding work. 3.2 Identify why following set procedures is necessary for quality and safety. 3.3 Describe how standards help inspectors check if work is acceptable. 3.4 State the consequence of not following standards and codes in inspection work.
4. Explain how QA/QC activities help prevent defects and improve project safety and reliability.	4.1 Give examples of common defects that QA/QC activities can catch early. 4.2 Describe how finding and fixing problems during work is better than finding them after. 4.3 Explain how proper QA/QC activities make piping systems safer and more reliable.

4.4 Identify how QA/QC helps save money and time by preventing major problems.

QC0079-02- Basic Piping & Welding Materials and Tools Overview

This unit familiarizes learners with the essential materials and equipment used in piping and welding operations. It covers the identification of various pipe grades, fittings, and welding consumables, alongside proper handling and storage techniques. Additionally, the unit introduces standard inspection tools, ensuring learners can recognize and select the correct equipment for basic measurement and material verification tasks on the worksite.

Learning Outcome:	Assessment Criteria:
1. Identify common piping materials and basic welding consumables used in industrial applications.	1.1 Name at least three common piping materials and state where they are typically used. 1.2 List basic welding consumables such as filler materials and flux. 1.3 Explain why different materials are chosen for different piping applications. 1.4 Identify the appearance or characteristics of common piping materials when viewed.
2. Understand the properties and typical uses of different metals and alloys.	2.1 Describe the basic properties of common metals used in piping (strength, flexibility, corrosion resistance). 2.2 Explain why certain metals are better suited for high-temperature or high-pressure applications. 2.3 State the typical uses of at least two common alloys in industrial piping systems. 2.4 Identify how material properties affect the quality and safety of welded joints.
3. Recognise basic welding tools, equipment, and inspection instruments.	3.1 Name basic welding tools and equipment and describe their simple function. 3.2 Identify inspection instruments used for visual checks and basic measurements. 3.3 Explain the purpose of at least three common inspection tools. 3.4 Recognise the correct tool to use for specific piping and welding inspection tasks.
4. Demonstrate awareness of proper handling and storage of materials and tools.	4.1 Describe how piping materials and welding consumables should be stored to prevent damage. 4.2 Explain the importance of keeping tools clean and in good working order. 4.3 State the correct way to handle fragile inspection instruments.

4.4 Identify potential problems that occur if materials and tools are not stored properly.

QC0079-03- Visual Inspection Techniques for Welds and Joints

Focused on practical skills, this unit details the principles of Visual Testing (VT) for assessing weld quality. Learners will study common surface defects such as cracks, porosity, and undercut, and understand their acceptance criteria. The unit emphasizes pre-welding checks, including joint preparation and fit-up inspection, enabling learners to identify irregularities before, during, and after the welding process effectively.

Learning Outcome:	Assessment Criteria:
1. Understand the principles and limitations of visual inspection in welding and piping work.	1.1 Explain what visual inspection is and how it is used in welding quality control. 1.2 Describe what an inspector can see by looking at a weld visually. 1.3 State the limitations of visual inspection (what it cannot show). 1.4 Identify when visual inspection alone is enough and when other testing is needed.
2. Identify common surface defects in welds and joints through visual examination.	2.1 Name at least four common surface defects found in welds (cracks, porosity, undercut, spatter). 2.2 Describe the appearance of each common defect so it can be recognised. 2.3 Explain what causes common surface defects to occur. 2.4 Identify defects in photographs or samples of actual welds.
3. Apply basic visual inspection methods using simple inspection tools.	3.1 Demonstrate the correct way to visually inspect a weld or joint. 3.2 Use basic inspection tools correctly (magnifier, ruler, or gauge) to check welds. 3.3 Record inspection findings clearly in simple notes or checklists. 3.4 Explain how to inspect welds in different positions (flat, vertical, overhead).
4. Recognise acceptable and unacceptable weld conditions based on inspection criteria.	4.1 State the acceptance criteria for welds based on standard requirements. 4.2 Compare a sample weld to acceptance criteria and decide if it passes or fails. 4.3 Explain why certain defects are acceptable and others are not acceptable.

4.4 Identify when a weld should be rejected and reported to a supervisor.

QC0079-04- Quality Documentation & Reporting Fundamentals

This unit establishes the critical importance of accurate record-keeping in quality control. Learners will examine the lifecycle of inspection documentation, including Inspection and Test Plans (ITPs), daily reports, and non-conformance reports (NCRs). The curriculum highlights data integrity, traceability, and the professional responsibility of the inspector to ensure that all findings are clearly, concisely, and formally documented for project compliance.

Learning Outcome:

Assessment Criteria:

- | | |
|---|--|
| 1. Understand the purpose of quality documentation in piping and welding inspection. | 1.1 Explain why keeping records of inspection work is important.
1.2 Describe what information quality documents should contain.
1.3 State how quality documentation helps track work and show compliance.
1.4 Identify who needs to see quality inspection records and why. |
| 2. Identify common inspection records, checklists, and basic reporting formats. | 2.1 Name at least three types of inspection records or documents used in QA/QC work.
2.2 Describe the layout and purpose of a basic inspection checklist.
2.3 Explain what information goes into a simple inspection report.
2.4 Recognise common formats used for recording weld and piping inspection data. |
| 3. Demonstrate the ability to record inspection findings accurately and clearly. | 3.1 Complete a simple inspection checklist with correct information.
3.2 Write clear, legible notes about inspection findings.
3.3 Record defects, measurements, and acceptance decisions accurately.
3.4 Use correct terminology and symbols when documenting inspection work. |
| 4. Recognise the importance of traceability and proper document control. | 4.1 Explain what traceability means in quality documentation.
4.2 Describe why documents must be kept safe and controlled.
4.3 State how documents help follow the history of a weld or pipe installation. |

4.4 Identify the risks if inspection records are lost, damaged, or not kept properly.

QC0079-05- Health, Safety & Environmental Awareness in Inspection

This unit addresses the specific health, safety, and environmental risks associated with welding and piping inspection environments. Learners will identify hazards such as radiation, confined spaces, and high pressures, while learning the correct selection of Personal Protective Equipment (PPE). It underscores the inspector's duty to observe safety protocols, obtain necessary work permits, and minimize environmental impact during daily operations.

Learning Outcome:

Assessment Criteria:

- | | |
|---|--|
| 1. Understand basic health and safety principles relevant to piping and welding inspection. | <ul style="list-style-type: none">1.1 Explain basic health and safety rules that apply to piping and welding inspection work.1.2 Describe why following safety rules protects inspectors and others on site.1.3 State the responsibility of each worker to maintain a safe workplace.1.4 Identify how to report health and safety concerns to a supervisor. |
| 2. Identify common workplace hazards associated with welding and inspection activities. | <ul style="list-style-type: none">2.1 Name at least four common hazards in welding and inspection areas (heat, sharp edges, gases, noise).2.2 Describe the harm that each hazard can cause to workers.2.3 Explain where hazards are most likely to occur during inspection work.2.4 Identify ways to avoid or reduce contact with common workplace hazards. |
| 3. Recognise the importance of personal protective equipment (PPE) and safe working practices. | <ul style="list-style-type: none">3.1 List the basic PPE needed for piping and welding inspection work.3.2 Explain why each piece of PPE is necessary and what it protects.3.3 Demonstrate correct wearing and use of inspection PPE.3.4 Identify unsafe practices and explain why they put workers at risk. |
| 4. Demonstrate awareness of environmental responsibilities during inspection activities. | <ul style="list-style-type: none">4.1 Explain how to dispose of inspection waste properly.4.2 Describe the importance of preventing spills and contamination during inspection work.4.3 State environmental rules that apply to piping and welding inspection sites. |

4.4 Identify practices that reduce environmental harm during quality inspection activities.

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