



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

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COURSE BROCHURE

Pressure Equipment Fault Finding And Repair Training

Manufacturing, Engineering and Technology / Engineering and Related Design

Unit Standard 116052 · NQF Level 4 · 10 Credits · 7 Days

COURSE OVERVIEW

This course equips learners with the skills to identify, diagnose, and rectify faults in pressure equipment commonly used in industrial and commercial settings. It focuses on safe work practices, systematic fault-finding techniques, and compliance with relevant South African regulations. Participants will gain practical competence to ensure equipment reliability and operational safety.

Category	Manufacturing, Engineering and Technology
Subfield	Engineering and Related Design
Unit Standard	116052
Accreditation	SAQA Accredited · NQF Level 4 · 10 Credits
Duration	7 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply systematic fault-finding procedures to diagnose common pressure equipment failures.
- Analyze pressure equipment components to identify root causes of malfunctions.
- Demonstrate safe isolation and depressurization procedures before commencing repair work.
- Implement corrective actions using appropriate tools and repair techniques.
- Evaluate repair outcomes against operational and safety standards.
- Document fault-finding and repair activities in compliance with legal requirements.

WHO SHOULD ATTEND

- This course is designed for maintenance technicians, mechanical engineers, and plant operators who are responsible for the inspection, repair, and safe operation of pressure equipment such as boilers, compressors, and pressure vessels.

COURSE OUTLINE

Day 1: Introduction to Pressure Equipment and Fault Finding Principles

- Overview of pressure equipment: boilers, pressure vessels, piping, valves.
- Key components: shells, heads, nozzles, supports, safety devices.
- Principles of fault finding: observation, testing, analysis, isolation.
- Safety considerations: lock-out/tag-out, pressure isolation, PPE.
- Introduction to relevant standards: SANS 347, ASME VIII, OHS Act.
- Documentation: equipment registers, maintenance logs, defect reports.

Day 2: Pressure Equipment Design and Operating Principles

- Design codes and material selection (carbon steel, stainless steel, alloys).
- Pressure and temperature ratings, design margins.
- Operating principles: boilers (fire-tube, water-tube), heat exchangers, storage tanks.
- Common failure modes: stress corrosion cracking, pitting, creep, brittle fracture.
- Reading nameplates: MAWP, MDMT, test pressure, serial numbers.
- Correlating design with operational faults: thermal shock, water hammer.

Day 3: Systematic Fault Finding Techniques and Diagnostic Tools

- Fault finding methodologies: 5 Whys, cause-and-effect analysis, failure mode and effects analysis.
- Visual inspection techniques: cracks, distortion, leaks, corrosion.
- Non-destructive testing basics: ultrasonic thickness, magnetic particle, dye penetrant.
- Pressure testing: hydrostatic, pneumatic – procedures and safety.
- Interpreting test data: thickness loss, crack detection, pressure decay.
- Creating a fault finding report: observations, tests, conclusions.

Day 4: Common Faults in Pressure Equipment and Root Cause Analysis

- Common faults: flange leaks, gasket failures, valve seat wear, tube failures.
- Corrosion mechanisms: uniform, galvanic, pitting, crevice, under-deposit.
- Mechanical damage: impact, vibration-induced fatigue, thermal fatigue.
- Root cause analysis techniques: fault tree analysis, event tree analysis.
- Risk assessment: likelihood vs. severity, criticality ranking.
- Linking faults to repair: weld repair, overlay, replacement, re-rating.

Day 5: Repair Methods and Procedures for Pressure Equipment

- Approved repair methods: weld repair (full penetration, fillet), cladding, sleeving.
- Repair standards: API 510, API 570, ASME PCC-2.
- Material selection for repairs: matching base metal, filler metals.
- Pre-repair preparation: surface preparation, dimensional measurements, preheat.
- Welding procedures: WPS, PQR, welder qualifications.
- Post-repair heat treatment: stress relief, normalization.
- Quality control: visual inspection, NDT after repair, pressure test.

Day 6: Practical Application: Fault Finding and Repair Simulation

- Simulated fault scenarios: corrosion thinning, crack in weld, valve leakage.
- Hands-on use of ultrasonic thickness gauge, dye penetrant kit.
- Developing a repair plan: scope, materials, procedures, safety.
- Mock repair: surface preparation, welding simulation, NDT.

- Documentation: defect report, repair procedure, inspection records.
- Team exercise: collaborative fault diagnosis and repair planning.

Day 7: Integration, Assessment, and Continuous Improvement

- Comprehensive fault finding and repair workflow: from detection to sign-off.
- Summative assessment: written examination covering theory and standards.
- Practical assessment: fault finding and repair simulation (timed).
- Case studies: lessons learned from industry incidents.
- Continuous improvement: preventive maintenance planning, RBI (risk-based inspection).
- Course review and feedback session.
- Certification and next steps for professional development.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **10 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 28,200.00	R 28,200.00
1	In-House	R 36,700.00	R 36,700.00
1	On-Campus (Pretoria)	R 42,300.00	R 42,300.00

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	11 Aug 2026	On-Campus	Cape Town, South Africa
04 Aug 2026	12 Aug 2026	On-Campus	Dubai, UAE
05 Aug 2026	13 Aug 2026	On-Campus	Pretoria, South Africa
05 Aug 2026	13 Aug 2026	On-Campus	Lagos, Nigeria
06 Aug 2026	14 Aug 2026	On-Campus	Johannesburg, South Africa
07 Aug 2026	17 Aug 2026	On-Campus	Mauritius
10 Aug 2026	18 Aug 2026	On-Campus	Dubai, UAE
11 Aug 2026	19 Aug 2026	On-Campus	Pretoria, South Africa

Contact us if no suitable date is listed — on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 116052) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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