



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

Textile Machinery Wet Process Diagnosis And Major Repairs Training

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 116395 · NQF Level 5 · 60 Credits · 57 Days

COURSE OVERVIEW

This course equips maintenance professionals with the specialized knowledge and practical skills required to diagnose faults and perform major repairs on wet process textile machinery. Participants will learn to analyze mechanical and process-related issues, plan and execute complex repairs, and ensure machinery is restored to optimal operating condition, minimizing downtime and improving production efficiency.

Category	Manufacturing, Engineering and Technology
Subfield	Manufacturing and Assembly
Unit Standard	116395
Accreditation	SAQA Accredited · NQF Level 5 · 60 Credits
Duration	57 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply systematic diagnostic procedures to identify faults in wet process textile machinery.
- Analyze operational data and machine performance to determine root causes of mechanical and process failures.
- Evaluate repair options and select appropriate methods and materials for major repairs.
- Design repair plans and sequences to ensure safe and efficient execution.
- Implement major repairs on wet process machinery, including disassembly, component replacement, and reassembly.
- Demonstrate adherence to safety protocols and quality standards during repair activities.

WHO SHOULD ATTEND

- This course is designed for maintenance technicians, mechanical fitters, and engineering supervisors working in textile manufacturing plants who are involved in the maintenance and repair of wet process machinery such as dyeing, washing, and finishing equipment.

COURSE OUTLINE

Day 1: Introduction to Wet Process Machinery and Safety

- Overview of textile wet processes (pre-treatment, dyeing, printing, finishing).
- Classification of wet process machinery.
- Safety regulations (OHS Act, PPE requirements).
- Lockout/tagout and emergency stop systems.
- Machine guarding and safe work practices.
- Introduction to machine documentation and manuals.
- Basic machine components and their functions.

Day 2: Fundamentals of Machine Diagnostics

- Diagnostic methodology: observation, measurement, analysis.
- Common failure modes in wet process machines.
- Introduction to predictive maintenance (vibration, temperature, pressure monitoring).
- Hands-on: using multimeters to check electrical continuity and voltage.
- Hands-on: using pressure gauges on hydraulic/pneumatic systems.
- Documentation of diagnostic findings.

Day 3: Mechanical Components and Wear Analysis

- Types of bearings and their applications in wet environments.
- Seal types (mechanical seals, gland packing) and failure modes.
- Gear drives and belt drives: alignment and tension.
- Shaft alignment techniques.
- Wear measurement tools (callipers, micrometers, bore gauges).
- Case studies: diagnosing bearing failure in a dyeing machine.

Day 4: Electrical and Control Systems Diagnostics

- Electrical safety: isolation, testing for dead.
- Motor types (AC induction, DC) and common faults.
- Variable frequency drives (VFDs): parameters and fault codes.
- PLC basics: I/O modules, ladder logic interpretation.
- Sensor principles and troubleshooting.
- Hands-on: tracing a control circuit fault.

Day 5: Hydraulic and Pneumatic Systems in Wet Processing

- Hydraulic pumps (gear, vane, piston) and common failures.
- Directional control valves, relief valves, and check valves.
- Pneumatic cylinders and solenoid valves.
- Contamination control: filters, strainers, and oil analysis.
- Hands-on: pressure testing a hydraulic circuit.
- Troubleshooting slow or erratic actuator movement.

Day 6: Wet Process Specifics: Dyeing Machine Diagnostics

- Overview of dyeing machine types and their wet process cycles.
- Pump systems: centrifugal vs. axial flow, cavitation detection.
- Heat exchangers: fouling, scaling, and temperature control.
- Fabric transport systems (reels, rollers) and tension control.

- Diagnostic procedures for shade variation and colour mismatch.
- Case study: troubleshooting a jet dyeing machine.

Day 7: Washing and Rinsing Machine Diagnostics

- Continuous washing ranges: compartments, counterflow principles.
- Spray nozzles: clogging, wear, and pressure adjustment.
- Squeeze rollers: nip pressure, rubber hardness, and alignment.
- Vacuum systems: pump maintenance and leak detection.
- Water quality monitoring (pH, conductivity) and impact on washing.
- Troubleshooting fabric creasing and rope tangling.

Day 8: Finishing Machine Diagnostics (Stenter, Calender, Sanforizer)

- Stenter: chain lubrication, pin/clip condition, and overfeed control.
- Calender: roll deflection, temperature control, and nip pressure.
- Sanforizer: rubber belt condition, moisture control, and shrinkage.
- Heating systems: thermal oil, gas, or steam – diagnostics.
- Fabric tension control and alignment.
- Case study: diagnosing width variation on a stenter.

Day 9: Printing Machine Diagnostics (Rotary and Flatbed)

- Rotary screen printing: screen tension, glue application, and doctor blades.
- Flatbed printing: screen alignment, squeegee stroke, and flood bar.
- Colour paste circulation and viscosity control.
- Dryer systems: temperature profiling and exhaust.
- Diagnostic tools: stroboscope, tension meter, thickness gauge.
- Hands-on: aligning screens and adjusting squeegee parameters.

Day 10: Advanced Diagnostic Techniques and Condition Monitoring

- Vibration analysis: FFT, spectrum interpretation, balancing.
- Thermography: thermal imaging cameras, emissivity, and temperature limits.
- Oil analysis: sampling, particle count, and wear debris.
- Ultrasonic testing for leaks and bearing condition.
- Combining diagnostic methods: case study.
- Introduction to computerized maintenance management systems (CMMS).

Day 11: Major Repair Planning and Preparation

- Risk assessment and job safety analysis (JSA).
- Spare parts management: critical spares identification.
- Tooling: specialized tools for wet process machinery.
- Work order systems and documentation.
- Coordination with production scheduling.
- Machine preparation: draining, flushing, and lockout verification.

Day 12: Mechanical Overhaul Techniques

- Bearing removal and installation: press fit, heat induction.
- Mechanical seal replacement: face inspection, lapping.
- Shaft and housing repair: sleeving, metal stitching.
- Gearbox overhaul: shimming, backlash adjustment.
- Torque tightening procedures and torque wrenches.

- Post-repair alignment: laser alignment demo.

Day 13: Electrical and Control System Major Repairs

- Motor replacement: coupling alignment, wiring verification.
- VFD replacement: parameter programming, motor data input.
- PLC module replacement: addressing, I/O testing.
- Control panel rewiring: cable routing, terminal identification.
- Commissioning: functional tests, safety checks.
- Documentation: redlining schematics, updating manuals.

Day 14: Hydraulic and Pneumatic Systems Major Repairs

- Pump overhaul: clearance checks, seal replacement.
- Cylinder rebuild: honing, seal kit installation.
- Valve repair: spool inspection, solenoid replacement.
- Hose and fitting replacement: crimping, routing.
- System flushing: contamination removal, filter change.
- Pressure and flow testing: using test rigs.

Day 15: Wet Process Specific Major Repairs: Dyeing Machine

- Impeller replacement: balancing, clearance setting.
- Mechanical seal installation on dyeing machine pumps.
- Heat exchanger tube bundle repair: plugging, replacement.
- Roller recovery: re-covering, dynamic balancing.
- Sensor calibration: RTD, thermocouple, pressure transmitter.
- Post-repair dyeing trial and quality check.

Day 16: Wet Process Specific Major Repairs: Washing and Finishing

- Squeeze roller rubber cover replacement: grinding, crowning.
- Stenter chain repair: pin replacement, lubrication system.
- Clip replacement and alignment on stenter.
- Calender roll bearing replacement and crown adjustment.
- Vacuum pump overhaul: rotor, vanes, seals.
- Post-repair fabric quality testing.

Day 17: Welding and Fabrication for Machine Repairs

- Welding safety: fire prevention, ventilation, PPE.
- Stainless steel welding: electrode selection, heat control.
- Crack repair: grinding, preheating, welding procedure.
- Fabrication of machine guards and supports.
- Weld inspection: visual, dye penetrant testing.
- Grinding and finishing for food-grade surfaces.

Day 18: Commissioning and Testing After Major Repairs

- Commissioning plan: sequence, responsibilities, documentation.
- No-load test: rotation, vibration, temperature.
- Load test: process parameters, quality checks.
- Safety system verification: emergency stops, guards.
- Performance tuning: speed, tension, temperature.
- Final acceptance test and sign-off.

Day 19: Troubleshooting Complex Faults and Root Cause Analysis

- RCA methodology: data collection, cause mapping.
- Fishbone diagram for wet process machine failures.
- Fault tree analysis: AND/OR gates, probability.
- Case study: recurring pump failure – electrical, mechanical, process.
- Corrective action: design changes, maintenance procedures.
- Implementation and follow-up.

Day 20: Integrated Practical Assessment and Course Review

- Simulated fault scenario: machine breakdown.
- Diagnostic process: symptom analysis, testing, root cause.
- Repair planning: parts, tools, safety, timeline.
- Hands-on repair task: component replacement.
- Commissioning and quality check.
- Written report and oral presentation.
- Final assessment and feedback.

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 **60 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 164,000.00	R 164,000.00
1	In-House	R 213,300.00	R 213,300.00
1	On-Campus (Pretoria)	R 246,000.00	R 246,000.00

UPCOMING SESSIONS

Start	End	Method	Venue
07 Aug 2026	26 Oct 2026	On-Campus	Pretoria, South Africa
07 Aug 2026	26 Oct 2026	On-Campus	Lagos, Nigeria
10 Aug 2026	27 Oct 2026	On-Campus	Durban, South Africa
10 Aug 2026	27 Oct 2026	On-Campus	Mauritius
11 Aug 2026	28 Oct 2026	On-Campus	Cape Town, South Africa
12 Aug 2026	29 Oct 2026	On-Campus	Dubai, UAE
13 Aug 2026	30 Oct 2026	On-Campus	Pretoria, South Africa
14 Aug 2026	02 Nov 2026	On-Campus	Abu Dhabi, UAE

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 116395) 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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