



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

Alternating Current Winder Operation And Electrical Motor Maintenance Training

Manufacturing, Engineering and Technology / Fabrication and Extraction

Unit Standard 110154 · NQF Level 3 · 15 Credits · 12 Days

COURSE OVERVIEW

This course equips learners with the knowledge and practical skills required to operate alternating current winders and perform electrical motor maintenance in an industrial setting. Participants will gain competency in winding procedures, fault diagnosis, and routine maintenance to ensure optimal motor performance and safety.

Category	Manufacturing, Engineering and Technology
Subfield	Fabrication and Extraction
Unit Standard	110154
Accreditation	SAQA Accredited · NQF Level 3 · 15 Credits
Duration	12 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply safe operating procedures for alternating current winders in accordance with industry standards
- Demonstrate correct winding techniques for AC motor coils and verify insulation integrity
- Analyze electrical motor faults using diagnostic tools and interpret test results
- Implement preventive maintenance schedules to extend motor lifespan and reduce downtime
- Evaluate motor performance parameters and recommend corrective actions
- Design basic winding layouts and select appropriate materials for repair or rewind

WHO SHOULD ATTEND

- This course is designed for electrical technicians, maintenance engineers, and winder operators working in mining, manufacturing, and heavy industry environments.

COURSE OUTLINE

Day 1: Introduction to AC Motors and Winding Principles

- Overview of AC motors: induction, synchronous, single-phase, three-phase
- Basic electromagnetic principles: magnetic fields, flux, torque
- Winding configurations: concentric, lap, wave
- Insulation classes and temperature ratings
- Safety standards: lockout/tagout, PPE, electrical safety

Day 2: AC Motor Construction and Components

- Stator core and windings
- Rotor types: squirrel cage, wound rotor
- Bearings: sleeve, ball, roller
- End bells, fans, and terminal boxes
- Nameplate data interpretation
- Common motor faults and failure modes

Day 3: Winding Diagrams and Connection Methods

- Winding diagram symbols and layout
- Star (wye) vs delta connections
- Pole-changing windings (Dahlander)
- Coil pitch and distribution factor
- Winding resistance and continuity checks
- Practical examples using diagrams

Day 4: Testing and Diagnostic Techniques

- Insulation resistance (IR) test procedures
- Polarization index (PI) measurement
- DC winding resistance measurement
- Surge comparison testing
- Hi-pot testing basics
- Interpreting test data and standards

Day 5: Winding Repair and Rewinding Procedures

- Rewinding process overview
- Wire gauge selection and insulation materials
- Coil removal techniques: heating, cutting
- Core cleaning and inspection
- Slot insulation insertion
- Winding data recording

Day 6: Coil Winding and Insertion

- Coil winding machines and manual winding
- Coil forming and sizing
- Insertion tools and techniques
- Phase insulation and wedges
- Connecting coils: series/parallel
- Phase sequence and lead identification

Day 7: Winding Connection and Insulation

- Connecting winding groups (star/delta)
- Soldering and crimping connections
- Insulation varnish application methods: dipping, trickle
- Curing and baking procedures
- Continuity and resistance checks
- Winding data sheets

Day 8: Final Assembly and Mechanical Checks

- Bearing installation and greasing
- Rotor insertion and end bell fitting
- Air gap measurement
- Fan and cover installation
- Mechanical run-in and vibration checks
- Noise and temperature monitoring

Day 9: Electrical Motor Maintenance Strategies

- Preventive vs predictive maintenance
- Vibration analysis basics
- Thermal imaging for hot spots
- Motor current signature analysis
- Oil analysis for bearings
- Maintenance planning and documentation

Day 10: Troubleshooting and Fault Finding

- Fault categories: electrical, mechanical, environmental
- Troubleshooting flowcharts
- Insulation failure causes
- Bearing failure analysis
- Overheating and load issues
- Corrective maintenance procedures

Day 11: Safety, Standards, and Regulations

- OHS Act and electrical regulations
- SANS 10142-1 wiring code
- Lockout/tagout procedures
- Arc flash and shock protection
- Safe use of test equipment
- Emergency response and first aid

Day 12: Practical Integration and Assessment

- Full motor service: inspection, test, repair
- Hands-on rewinding and assembly
- Final electrical and mechanical tests
- Documentation and reporting
- Review and Q&A;
- Summative assessment

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 **15 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 41,000.00	R 41,000.00
1	In-House	R 53,300.00	R 53,300.00
1	On-Campus (Pretoria)	R 61,500.00	R 61,500.00

UPCOMING SESSIONS

Start	End	Method	Venue
31 Jul 2026	17 Aug 2026	On-Campus	Cape Town, South Africa
31 Jul 2026	17 Aug 2026	On-Campus	Accra, Ghana
03 Aug 2026	18 Aug 2026	On-Campus	Pretoria, South Africa
03 Aug 2026	18 Aug 2026	On-Campus	Lagos, Nigeria
04 Aug 2026	19 Aug 2026	On-Campus	Johannesburg, South Africa
05 Aug 2026	20 Aug 2026	On-Campus	Mauritius
06 Aug 2026	21 Aug 2026	On-Campus	Cape Town, South Africa
07 Aug 2026	24 Aug 2026	On-Campus	Dubai, 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 110154) 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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