



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

Non Continuous Glass Furnace Operation Skills Training

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 110274 · NQF Level 3 · 25 Credits · 22 Days

COURSE OVERVIEW

This course equips learners with the specialized skills required to operate non-continuous glass furnaces safely and efficiently. It covers furnace start-up, monitoring, shutdown procedures, and troubleshooting to ensure consistent glass quality and operational reliability. The training emphasizes adherence to safety protocols and standard operating procedures in a glass manufacturing environment.

Category	Manufacturing, Engineering and Technology
Subfield	Manufacturing and Assembly
Unit Standard	110274
Accreditation	SAQA Accredited · NQF Level 3 · 25 Credits
Duration	22 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Demonstrate the correct procedures for starting up, operating, and shutting down a non-continuous glass furnace.
- Monitor furnace parameters such as temperature, pressure, and fuel flow to maintain optimal operating conditions.
- Apply safety protocols and emergency response procedures specific to glass furnace operations.
- Analyze furnace performance data and identify deviations to implement corrective actions.
- Perform routine inspections and basic maintenance tasks on furnace components.
- Document operational logs and report incidents or anomalies according to company standards.

WHO SHOULD ATTEND

- This course is designed for furnace operators, production supervisors, and maintenance personnel working in glass manufacturing or related industries who are responsible for operating batch or intermittent glass furnaces.

COURSE OUTLINE

Day 1: Introduction to Glass Furnace Operations

- Overview of glass manufacturing processes.
- Types of glass furnaces: continuous vs. non-continuous.
- Key components: refractory lining, burners, charging system, and control systems.
- Basic principles of glass melting and heat transfer.

Day 2: Raw Materials and Batch Preparation

- Silica sand, soda ash, limestone, and other additives.
- Batch formulation and stoichiometry.
- Moisture content and particle size considerations.
- Batch handling and storage.

Day 3: Furnace Design and Construction

- Refractory types: silica, alumina, zirconia.
- Furnace geometry: melter, throat, and working end.
- Insulation and heat loss minimization.
- Emergency shutdown and safety systems.

Day 4: Combustion Systems and Fuel Types

- Combustion stoichiometry and air-fuel ratio.
- Burner types: premix, nozzle mix, and oxy-fuel.
- Flame length, luminosity, and heat transfer.
- Fuel supply systems and safety.

Day 5: Instrumentation and Control Systems

- Thermocouples, pyrometers, and pressure transmitters.
- PID controllers and setpoint management.
- Level sensors for glass and batch.
- Alarm systems and troubleshooting.

Day 6: Furnace Startup Procedures

- Pre-startup checks and safety protocols.
- Controlled heating using dry-out schedules.
- Monitoring refractory expansion and cracking.
- Initial batch charging and melting.

Day 7: Melting Process and Quality Control

- Melting kinetics and fining agents.
- Bubble and seed elimination.
- Glass homogeneity and redox control.
- In-process testing: viscosity, density, and color.

Day 8: Furnace Operation – Normal Running

- Temperature profiling and adjustments.
- Batch charging rate and level control.
- Combustion tuning for efficiency.
- Daily inspection checklist.

Day 9: Glass Conditioning and Working End

- Cooling and homogenization in the working end.
- Forehearth and feeder systems.
- Temperature control for different forming processes.
- Stirring and mixing techniques.

Day 10: Energy Efficiency and Heat Recovery

- Waste heat recovery: regenerators and recuperators.
- Insulation upgrades and furnace sealing.
- Oxygen enrichment and combustion optimization.
- Energy benchmarking and monitoring.

Day 11: Troubleshooting Common Problems

- Glass defects: stones, cords, bubbles.
- Refractory wear and corrosion.
- Burner malfunction and flame instability.
- Batch carryover and bridging.

Day 12: Safety and Environmental Compliance

- Hot surface burns, molten glass splashes, and gas leaks.
- Emission control: SO_x, NO_x, particulates.
- Waste management and recycling.
- Emergency response plans and first aid.

Day 13: Refractory Maintenance and Repair

- Refractory inspection techniques.
- Gunning, patching, and shotcreting.
- Cold repair procedures and relining.
- Maintenance planning and documentation.

Day 14: Furnace Shutdown and Cooling

- Gradual cooling schedules.
- Draining molten glass.
- Post-shutdown inspection and cleaning.
- Safe demolition and refractory disposal.

Day 15: Data Logging and Process Optimization

- Data logging systems and software.
- Statistical process control (SPC).
- Performance indicators: yield, energy, uptime.
- Continuous improvement methodologies.

Day 16: Advanced Melting Techniques

- Oxy-fuel combustion benefits and challenges.
- Electric boosting for increased output.
- Vacuum refining and bubble injection.
- Melting of borosilicate and lead crystal.

Day 17: Quality Assurance and Testing

- Chemical analysis: XRF, ICP.
- Physical tests: coefficient of expansion, strength.
- Optical properties: transmission, refractive index.

- Statistical quality control charts.

Day 18: Teamwork and Communication in Operations

- Shift scheduling and roles.
- Communication protocols and reporting.
- Problem-solving in teams.
- Leadership and accountability.

Day 19: Case Studies and Best Practices

- Case studies: refractory failures, quality issues.
- Benchmarking against top performers.
- Innovations in furnace design.
- Developing an action plan for improvement.

Day 20: Assessment and Course Review

- Written test covering all modules.
- Practical demonstration of skills.
- Course evaluation and feedback.
- Certification process and next steps.

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 **25 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 66,600.00	R 66,600.00
1	In-House	R 86,600.00	R 86,600.00
1	On-Campus (Pretoria)	R 99,900.00	R 99,900.00

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	01 Sep 2026	On-Campus	Mauritius
04 Aug 2026	02 Sep 2026	On-Campus	Cape Town, South Africa
05 Aug 2026	03 Sep 2026	On-Campus	Dubai, UAE
06 Aug 2026	04 Sep 2026	On-Campus	Pretoria, South Africa
06 Aug 2026	04 Sep 2026	On-Campus	Lagos, Nigeria
07 Aug 2026	07 Sep 2026	On-Campus	Johannesburg, South Africa
10 Aug 2026	08 Sep 2026	On-Campus	Cape Town, South Africa
11 Aug 2026	09 Sep 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 110274) 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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