



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

Produce Seamless Hot Finished Tube And Pipe Training

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 119055 · NQF Level 4 · 60 Credits · 57 Days

COURSE OVERVIEW

This course equips learners with the knowledge and skills to produce seamless hot finished tube and pipe in accordance with industry standards. It covers the entire production process, from material preparation to final inspection, ensuring quality and safety compliance. Learners will gain practical competence in operating equipment and applying quality control measures.

Category	Manufacturing, Engineering and Technology
Subfield	Manufacturing and Assembly
Unit Standard	119055
Accreditation	SAQA Accredited · NQF Level 4 · 60 Credits
Duration	57 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Demonstrate understanding of the seamless hot finished tube and pipe production process.
- Apply safe work practices and quality control procedures during production.
- Operate equipment used in the production of seamless hot finished tube and pipe.
- Monitor and control production parameters to meet specifications.
- Inspect finished products for defects and ensure compliance with standards.
- Implement corrective actions when deviations occur.

WHO SHOULD ATTEND

- This course is designed for production operators, process technicians, and supervisors in the metal and pipe manufacturing industry who are involved in or oversee the production of seamless hot finished tube and pipe.

COURSE OUTLINE

Day 1: Introduction to Hot Finished Tube and Pipe Production

- Overview of the unit standard and training programme
- Workplace safety, hazards, and PPE
- Introduction to steel grades and material properties
- Hot forming fundamentals: temperature, plasticity, and deformation
- Seamless vs. welded tube differences

Day 2: Raw Materials and Preparation

- Billet types: round, square, and continuous cast
- Billet conditioning: scarfing, grinding, and defect removal
- Heating furnaces: rotary hearth, walking beam
- Temperature zones and uniformity
- Pre-heating inspection and record keeping

Day 3: The Piercing Process

- Rotary piercing mechanics: cross-rolling and elongation
- Mannesmann process: plug mill, cone-type piercer
- Mandrel design and materials
- Guide shoe adjustment and wear monitoring
- Defects: off-centre bore, lamination, and surface tears

Day 4: Elongation and Sizing

- Plug mill operation and pass design
- Elongator (Assel mill) principles
- Stretch-reducing mill (SRM) for diameter control
- Wall thickness variation and control
- Reduction ratio and its effect on properties

Day 5: Reheating and Thermal Treatment

- Reheating furnace types: pusher, walking beam, rotary
- Temperature measurement and control (thermocouples, pyrometers)
- Soaking time and heat uniformity
- Scale formation and descaling methods
- Decarburisation prevention

Day 6: Sizing and Reducing Mills

- Sizing mill rolls and pass design
- Continuous sizing mill (CSM) operation
- Reducing mill: 3-roll and 2-roll stands
- Tolerance standards (ASTM, API, DIN)
- Diameter and ovality control

Day 7: Cooling and Straightening

- Cooling beds: walking beam, rake-type
- Controlled cooling: air, mist, water spray
- Straightening: rotary straightener, 2-roll, 6-roll
- Straightening forces and adjustment

- Stress relief and product shape correction

Day 8: Cutting and End Finishing

- Hot saws: cold cutting vs. hot cutting
- Abrasive saws, friction saws, band saws
- Shearing for smaller diameters
- Torch cutting and plasma cutting
- End finishing: beveling, threading, and coupling attachment

Day 9: Non-Destructive Testing (NDT) Fundamentals

- UT for wall thickness and laminations
- ECT for surface defects
- Magnetic particle testing (MT) for ferrous materials
- Liquid penetrant testing (PT) for surface cracks
- NDT standards and acceptance criteria

Day 10: Destructive Testing and Quality Control

- Tensile testing: yield strength, ultimate tensile strength, elongation
- Hardness testing: Brinell, Rockwell, Vickers
- Impact testing: Charpy V-notch
- Metallography: microstructure analysis
- Hydrostatic testing: pressure, hold time, certification

Day 11: Defect Analysis and Troubleshooting

- Surface defects: seams, laps, scabs, cracks
- Internal defects: pipe, laminations, voids
- Dimensional defects: ovality, wall variation, eccentricity
- Root cause analysis using fishbone and 5-why
- Corrective actions: temperature adjustment, roll change, mandrel repair

Day 12: Process Control and Instrumentation

- Temperature sensors: thermocouples, pyrometers
- Speed and position sensors: encoders, tachometers
- Force and pressure sensors: load cells, pressure transducers
- SCADA and data logging
- Statistical process control (SPC) basics

Day 13: Maintenance and Equipment Care

- Preventive maintenance schedules
- Lubrication systems and grease types
- Roll grinding and pass profile maintenance
- Mandrel inspection and repair
- Predictive maintenance: vibration analysis, thermography

Day 14: Environmental and Sustainability Practices

- Emission control: dust, fumes, gases
- Water treatment and recycling
- Scale and scrap recycling
- Energy consumption reduction: furnace insulation, heat recovery
- Environmental legislation: NEMA, waste management act

Day 15: Health and Safety Management

- Hazard identification: hot surfaces, moving machinery, noise
- LOTO procedures for mill equipment
- Emergency shutdown and fire suppression
- Risk assessment methodology (HIRA)
- Personal protective equipment (PPE) and its correct use

Day 16: Quality Management Systems

- ISO 9001 requirements for manufacturing
- Quality manual, procedures, and work instructions
- Internal audits: preparation, execution, reporting
- Non-conformance and corrective action (CAPA)
- Continuous improvement tools: PDCA, kaizen

Day 17: Customer Specifications and Standards

- API 5L, ASTM A106, ASTM A53, EN 10216
- Dimensional tolerances: OD, WT, length, straightness
- Mechanical property requirements: yield, tensile, hardness
- Third-party inspection: SGS, Bureau Veritas, DNV
- Mill test certificates and traceability

Day 18: Production Planning and Scheduling

- Order entry and specification review
- Production routing and sequencing
- Capacity planning: furnace, mill, finishing line
- Bottleneck analysis and optimization
- Production tracking: ERP systems, dashboards

Day 19: Practical Application and Simulated Production

- Simulated mill operation: from billet to finished tube
- Hands-on NDT: UT and ECT on samples
- Dimensional measurement: micrometer, calliper, gauge
- Defect identification and reporting
- Emergency response drill

Day 20: Assessment and Course Review

- Written assessment covering theory and calculations
- Practical assessment: process steps, quality checks, safety
- Oral questioning and portfolio of evidence review
- Course feedback and improvement suggestions
- 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 **60 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 156,200.00	R 156,200.00
1	In-House	R 203,100.00	R 203,100.00
1	On-Campus (Pretoria)	R 234,300.00	R 234,300.00

UPCOMING SESSIONS

Start	End	Method	Venue
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
17 Aug 2026	03 Nov 2026	On-Campus	Shenzhen, China
18 Aug 2026	04 Nov 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 119055) 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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