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

Thermal Power Plant Operations

Custom Courses / Energy, Oil and Gas

Unit Standard AATICD-0502 · NQF Level 5 · 6 Credits · 3 Days

COURSE OVERVIEW

This course equips learners with the comprehensive knowledge and practical skills required to operate and manage thermal power plant systems safely and efficiently. It covers the principles of thermal power generation, key plant components, operational procedures, and safety protocols, enabling learners to contribute to reliable and sustainable power production.

Category	Custom Courses
Subfield	Energy, Oil and Gas
Unit Standard	AATICD-0502
Accreditation	SAQA Accredited · NQF Level 5 · 6 Credits
Duration	3 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Apply the fundamental principles of thermodynamics and energy conversion in the context of thermal power generation.
- Analyze the operation and control of key thermal power plant systems, including boiler, turbine, and generator systems.
- Implement safe operating procedures and emergency response protocols to mitigate risks and ensure plant integrity.
- Evaluate plant performance data to optimize efficiency and troubleshoot operational deviations.
- Demonstrate effective communication and teamwork in coordinating plant operations and maintenance activities.
- Design routine maintenance and inspection schedules to enhance equipment reliability and lifespan.

WHO SHOULD ATTEND

- This course is designed for aspiring and current power plant operators, technicians, and maintenance personnel who seek to enhance their operational competencies.
- It is also suitable for engineers and supervisors involved in power generation who require a deeper understanding of thermal plant operations.

COURSE OUTLINE

Day 1: **Fundamentals of Thermal Power Generation**

- Overview of thermal power plants and their role in the energy mix
- Rankine cycle and efficiency considerations
- Main components: boiler, turbine, condenser, feedwater system, cooling tower
- Fuel types, handling, and combustion
- Steam generation and superheating
- Introduction to steam turbine operation and governing
- Environmental impact: emissions, ash handling, and water usage
- Safety fundamentals: permits, PPE, and emergency procedures

Day 2: **Operational Processes and Control Systems**

- Start-up and shutdown sequences
- Boiler operation: combustion control, draft systems, soot blowing
- Turbine operation: warm-up, roll-off, synchronizing, and load control
- Feedwater and boiler water chemistry, and water treatment
- Condenser and cooling systems operation
- Instrumentation: transmitters, controllers, and DCS
- Control loops: combustion, feedwater, steam pressure, and temperature
- Performance indicators: heat rate, capacity factor, and availability
- Common problems: tube leaks, vibration, and corrosion

Day 3: **Advanced Operations, Maintenance, and Compliance**

- Advanced operational optimization: variable pressure operation, sliding pressure
- Maintenance planning and scheduling for boilers, turbines, and auxiliaries
- Condition monitoring: vibration analysis, thermography, oil analysis
- Root cause analysis techniques (5 Whys, fishbone
- Environmental compliance: emission limits, water discharge, waste management
- Safety management systems: risk assessment, incident investigation
- Case studies of operational excellence and failures
- Emergency preparedness and response planning

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 **6 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 13,900.00	**R 13,900.00**
1	In-House	R 18,700.00	**R 18,700.00**
1	On-Campus (Pretoria)	R 20,800.00	**R 20,800.00**

UPCOMING SESSIONS

Start	End	Method	Venue
01 Dec 2026	03 Dec 2026	On-Campus	Victoria Falls, Zimbabwe
01 Dec 2026	03 Dec 2026	On-Campus	Dubai, UAE
02 Dec 2026	04 Dec 2026	On-Campus	Shenzhen, China
02 Dec 2026	04 Dec 2026	On-Campus	Cape Town, South Africa
08 Dec 2026	10 Dec 2026	On-Campus	Maseru, Lesotho
08 Dec 2026	10 Dec 2026	On-Campus	Kigali, Rwanda
08 Dec 2026	10 Dec 2026	On-Campus	Accra, Ghana
08 Dec 2026	10 Dec 2026	On-Campus	Cape Town, South Africa

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

HOW TO GET A QUOTATION OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard AATICD-0502) and click **Get A Quotation**. 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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