



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

Combined Cycle Power Plants

Custom Courses / Energy, Oil and Gas

Unit Standard AATICD-0505 · NQF Level 5 · 6 Credits · 3 Days

COURSE OVERVIEW

This course provides a comprehensive understanding of combined cycle power plants, covering the principles of gas and steam turbine operation, heat recovery steam generators, and plant performance optimization. Participants will learn to analyze plant efficiency, implement operational best practices, and evaluate environmental and economic factors.

Category	Custom Courses
Subfield	Energy, Oil and Gas
Unit Standard	AATICD-0505
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 thermodynamic principles to analyze the performance of combined cycle power plants.
- Evaluate the operational characteristics of gas turbines, steam turbines, and heat recovery steam generators.
- Design strategies to optimize plant efficiency and reduce emissions.
- Implement maintenance and troubleshooting procedures for combined cycle systems.
- Analyze the economic and environmental impacts of combined cycle power generation.
- Demonstrate understanding of control systems and grid integration for combined cycle plants.

WHO SHOULD ATTEND

- This course is designed for engineers, technicians, and operations personnel involved in the power generation sector, as well as project managers and consultants seeking to enhance their knowledge of combined cycle technology.

COURSE OUTLINE

Day 1: Fundamentals of Combined Cycle Power Plants

- Introduction to power generation and the need for efficient technologies
- Overview of gas turbine (Brayton cycle) and steam turbine (Rankine cycle)
- Combined cycle concept: gas turbine, heat recovery steam generator (HRSG), and steam turbine
- Major components: compressor, combustor, turbine, HRSG, condenser, and generators
- Efficiency comparisons: simple cycle vs combined cycle
- Environmental impact: lower CO2 emissions and water usage
- Typical plant configurations (multi-shaft, single-shaft)
- Introduction to plant control and monitoring systems

Day 2: Operation and Performance Analysis

- Gas turbine operation: start-up, shutdown, and load control
- HRSG design and operation: heat transfer, steam generation, and pressure levels
- Steam turbine operation: steam admission, condensing, and extraction
- Condenser and cooling systems: types and operation
- Performance metrics: heat rate, efficiency, capacity factor, and availability
- Factors affecting performance: ambient conditions, fuel quality, and component degradation
- Performance testing and analysis techniques
- Operational troubleshooting: common faults and corrective actions

Day 3: Maintenance, Control, and Integration

- Maintenance planning: preventive, predictive, and corrective maintenance
- Inspection and repair of gas turbines, HRSGs, and steam turbines
- Condition monitoring and diagnostic tools
- Control systems: DCS, plant automation, and supervisory control
- Load following and grid integration: frequency control and ramping
- Safety systems and emergency procedures
- Environmental compliance: emissions control and water management
- Case studies: optimizing plant performance and reliability

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 18,100.00	R 18,100.00
1	On-Campus (Pretoria)	R 20,800.00	R 20,800.00

UPCOMING SESSIONS

Start	End	Method	Venue
30 Sep 2026	02 Oct 2026	On-Campus	Maseru, Lesotho
30 Sep 2026	02 Oct 2026	On-Campus	London, UK
05 Oct 2026	07 Oct 2026	On-Campus	Mbabane, Eswatini
05 Oct 2026	07 Oct 2026	Online	—
06 Oct 2026	08 Oct 2026	On-Campus	Nairobi, Kenya
06 Oct 2026	08 Oct 2026	On-Campus	Lusaka, Zambia
07 Oct 2026	09 Oct 2026	On-Campus	Bangkok, Thailand
07 Oct 2026	09 Oct 2026	On-Campus	Windhoek, Namibia

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 AATICD-0505) 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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