



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

Fluid Power Systems: Hydraulics and Pneumatics

Custom Courses / Engineering and Instrumentation

Unit Standard AATICD-0035 · NQF Level 5 · 10 Credits · 5 Days

COURSE OVERVIEW

This course provides learners with a comprehensive understanding of fluid power systems, focusing on hydraulics and pneumatics. It covers the principles, components, and applications of these systems in industrial settings, enabling learners to effectively operate, maintain, and troubleshoot fluid power equipment. The course also emphasizes safety practices and energy efficiency in fluid power systems.

Category	Custom Courses
Subfield	Engineering and Instrumentation
Unit Standard	AATICD-0035
Accreditation	SAQA Accredited · NQF Level 5 · 10 Credits
Duration	5 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply the fundamental principles of fluid power, including Pascal's law, flow, and pressure in hydraulic and pneumatic systems.
- Analyze the functions and applications of key components such as pumps, valves, actuators, and accumulators in fluid power circuits.
- Design basic hydraulic and pneumatic circuits to perform specific tasks, using schematic symbols and industry standards.
- Implement proper safety procedures and maintenance practices for fluid power systems to ensure reliable and efficient operation.
- Evaluate system performance by interpreting pressure, flow, and temperature readings to diagnose and troubleshoot common faults.

WHO SHOULD ATTEND

- This course is designed for technicians, engineers, and maintenance personnel who work with or supervise fluid power systems in manufacturing, mining, or other industrial environments.
- It is also suitable for individuals seeking to enhance their technical skills in hydraulics and pneumatics.

COURSE OUTLINE

Day 1: Introduction to Fluid Power and Fundamental Principles

- Overview of fluid power: hydraulics vs pneumatics
- Basic principles: Pascal's law, pressure, flow, and force
- Hydraulic fluids: types, properties, and selection criteria
- Pneumatic air: generation, conditioning, and distribution
- System components: reservoirs, pumps, compressors, actuators, valves
- Safety practices in fluid power systems

Day 2: Hydraulic Systems – Components and Circuit Design

- Hydraulic pumps: gear, vane, piston types and characteristics
- Hydraulic actuators: cylinders (single/double acting) and motors
- Directional control valves: types, symbols, and applications
- Pressure control valves: relief, reducing, sequence
- Flow control valves and accessories (filters, accumulators, heat exchangers)
- Circuit diagram symbols and interpretation
- Designing a basic hydraulic circuit

Day 3: Pneumatic Systems – Components and Circuit Design

- Air compressors: types, selection, and maintenance
- Air treatment: filters, regulators, lubricators (FRL units)
- Pneumatic actuators: cylinders, rotary actuators, air motors
- Directional control valves: solenoid, pilot, and mechanical actuation
- Flow control and speed regulation
- Pneumatic circuit design and simulation
- Electro-pneumatic control basics

Day 4: System Maintenance, Troubleshooting, and Safety

- Preventive maintenance schedules and procedures
- Fluid contamination control and filtration
- Troubleshooting techniques: pressure, flow, and temperature checks
- Common faults: leaks, noise, overheating, erratic motion
- Safety regulations: lockout/tagout, pressure release, hazard identification
- Use of pressure gauges, flow meters, and diagnostic software

Day 5: Advanced Applications, Integration, and Final Assessment

- Hydro-pneumatic systems: applications and benefits
- Proportional and servo valves in closed-loop control
- System integration with PLCs and sensors
- Energy efficiency and system optimization
- Case studies: mobile hydraulics, automation, and manufacturing
- Review and preparation for the final 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 **10 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 24,200.00	R 24,200.00
1	In-House	R 31,400.00	R 31,400.00
1	On-Campus (Pretoria)	R 36,200.00	R 36,200.00

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	14 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Abu Dhabi, UAE
17 Aug 2026	21 Aug 2026	On-Campus	Harare, Zimbabwe
17 Aug 2026	21 Aug 2026	On-Campus	Shenzhen, China
24 Aug 2026	28 Aug 2026	On-Campus	Bangkok, Thailand
24 Aug 2026	28 Aug 2026	On-Campus	Victoria Falls, Zimbabwe
31 Aug 2026	04 Sep 2026	On-Campus	Lusaka, Zambia
31 Aug 2026	04 Sep 2026	On-Campus	London, UK

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-0035) 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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