



PROCESS AND CHEMICAL ENGINEERING

Boiler Operations, Control and Combustion Efficiency

5 day course

Classroom, online or in-house

Course overview

A boiler is usually the largest single fuel consumer on a site, which makes a point of combustion efficiency worth more each year than most maintenance budgets, and an uncontrolled one is among the most dangerous items of plant present. This course covers operating one well and safely. Delegates work through boiler types and the steam cycle, combustion theory and the excess air that separates efficient firing from wasteful or dangerous firing, and burner management and the interlocks that prevent a furnace explosion. Water treatment, blowdown and carryover are covered as the causes of most tube failures. The course closes on efficiency testing, heat loss accounting and the operating decisions that move fuel consumption.

What you will learn

- Describe boiler types, the steam cycle and the main circuits
- Apply combustion theory and control excess air correctly
- Operate burner management systems and understand each interlock
- Manage feedwater treatment, blowdown and carryover
- Recognise the causes of tube failure and act before one occurs
- Conduct an efficiency test and account for heat losses
- Identify the daily operating decisions that move fuel consumption

Who should attend

- Boiler operators and shift supervisors
- Plant and utilities engineers
- Maintenance and inspection staff
- Energy managers
- Process engineers responsible for steam systems

Course outline

- 01 Boiler types and the steam cycle
- 02 Combustion theory, excess air and flue gas analysis
- 03 Burner management systems and interlocks
- 04 Feedwater treatment and chemistry
- 05 Blowdown, carryover and steam purity
- 06 Tube failure mechanisms
- 07 Efficiency testing and heat loss accounting
- 08 Operating decisions that move fuel cost

Upcoming dates

Dates	Venue	Format	Fee per delegate
21 to 25 September 2026	Mbabane, Eswatini	Classroom	R19,950
19 to 23 October 2026	Online	Online	R8,500
1 to 5 February 2027	Kampala, Uganda	Classroom	USD 1,325
1 to 5 March 2027	Lagos, Nigeria	Classroom	USD 1,325



Fees and how to register

This 5 day course is **R8,500** per delegate online, **R19,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 1,325** in the classroom elsewhere in Africa. In-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afriscience.co.za, or WhatsApp us on **+27 63 479 1136**.

AfriScience Group | +27 61 536 6531 | info@afriscience.co.za | Pretoria, Gauteng, South Africa