



POWER AND ELECTRICAL TRAINING

Transformer Operation, Maintenance, Testing and Diagnosis

5 day course

Classroom, online or in-house

Course overview

A power transformer is the most expensive single item in most substations and the one with the longest replacement lead time, so its condition governs both reliability and capital planning. This course covers keeping it in service. Delegates work through construction and operating principles, cooling and loading including the effect of overload on insulation life, and the protection and monitoring around it. Testing is the core: insulation resistance and polarisation index, turns ratio, winding resistance, power factor and capacitance, frequency response analysis, and what each result actually indicates. The course closes on interpreting a set of test results together to decide whether a transformer stays in service, and on planning life extension.

What you will learn

- Explain transformer construction, operating principles and cooling
- Assess the effect of loading and overload on insulation life
- Specify protection and monitoring appropriate to a unit
- Carry out and interpret the main electrical diagnostic tests
- Apply frequency response analysis to detect winding movement
- Read a full set of test results together to reach a condition judgement
- Plan maintenance, life extension and replacement

Who should attend

- Electrical and substation engineers
- Maintenance and testing technicians
- Asset managers in utilities and heavy industry
- Commissioning engineers
- Technical staff responsible for transformer fleets

Course outline

- 01 Transformer construction, principles and cooling
- 02 Loading, overload and insulation ageing
- 03 Protection and condition monitoring
- 04 Insulation resistance and polarisation index
- 05 Turns ratio and winding resistance testing
- 06 Power factor, capacitance and dielectric testing
- 07 Frequency response analysis and winding movement
- 08 Interpreting results together and deciding on service
- 09 Life extension and replacement planning

Upcoming dates

Dates	Venue	Format	Fee per delegate
2 to 6 October 2026	Kigali, Rwanda	Classroom	R11,995
25 to 29 October 2026	Lagos, Nigeria	Classroom	R11,995
17 to 21 November 2026	Kampala, Uganda	Classroom	R11,995
22 to 26 November 2026	Windhoek, Namibia	Classroom	R11,995



Fees and how to register

Online **from R6,500** per delegate, classroom **from R11,995** per delegate, 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**.

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