



## Power Transformers Course

### Course Overview

**Power Transformers, Earthing Transformers and Reactors** constitute the primary nodes of power transmission, distribution and reticulation systems.

This course aims to provide electrical professionals with a clear understanding of these key and critical components within a power system context. The course explains the physical characteristics of these components and the role it plays in the power delivery process, what it can and cannot do in terms of its operational specifications.

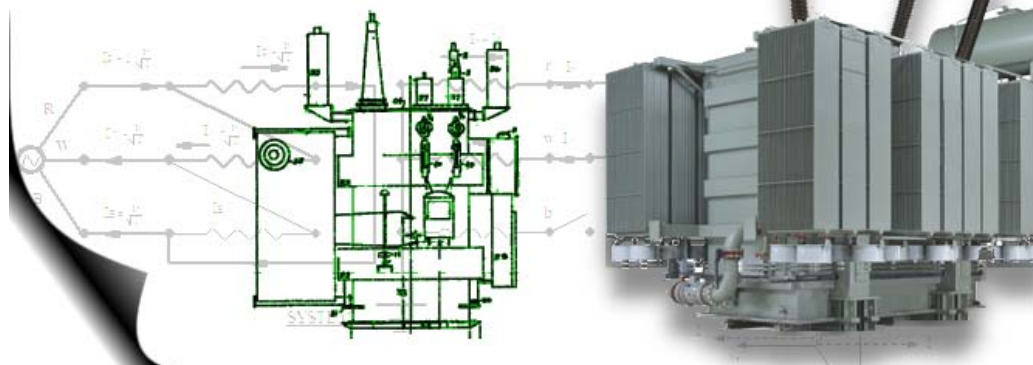
The course further provides an understanding of whole life cycle engineering management of these components in terms of its performance and manufacturing specifications, testing, safe operation and sound integration within a power system.

Course focus covers the following fields:

- Physical constructional features,
- Electrical characteristic design parameters
- Specification details and requirements
- Performance requirements, characteristics, and parameters
- Operational features, conditions, requirements and limitations
- Electrical testing parameters
- Electrical protection requirements

### Topics

- Core materials and construction
- Winding forms and magnetic force withstanding requirements
- Tanks, oils, bushings and fittings
- Insulation and cooling
- Loading and fault current limitation
- Tap changing
- Vector grouping and phase relationships
- Electrical performance characteristics and parameters
- Equivalent circuits
- Impedances (positive, negative and zero phase sequence)
- Connections to power systems
- Regulation - active and reactive load behavior
- Parallel operation - requirements and limitations
- Current distribution and vectors under load and fault conditions
- Magnetizing and harmonics
- Tertiary windings and effects on harmonics and zero sequence impedance
- Fault types and electrical protection requirements
- Testing and maintenance
- Specifications



Course dates  
TBA

Course duration  
3 days – 08:30 to 16:00 daily

Course fees  
R6 600 (incl. VAT)  
per delegate

Course venue  
NETGroup Academy  
28 Regency Rd  
Route 21 Corporate Park  
Cnr Boeing & Nelmapius Rd  
Irene, Centurion

### What's included

- Domain expert facilitators
- Training Guide
- Quality Training Venue
- Lunches and Refreshments
- Ample Parking

Registration deadline  
2 weeks prior to the  
scheduled course

### Contact details

Tel: 012 345 6005 /  
0861 NET GRP

Fax: 012 345 6633

email: [academy@netgroup.co.za](mailto:academy@netgroup.co.za)

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Elardus Park  
0047

0861 NET GRP  
[www.netgroup.co.za](http://www.netgroup.co.za)

# NETGroup Academy



Who should attend  
Engineers, Technologists and Academics working in:

- the power generation industry;
- industrial production plants;
- the electrical power consulting industry;
- power system fields involving planning, design, specification, construction, testing, commissioning, operation and maintenance of rotating power plant.

## Accreditation

This course is being accredited for 3 CPD points.

NETGroup Academy is registered with the ISETT SETA and Consulting Engineers South Africa as an accredited training service provider.



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## Outcomes

When you have completed this course, you will:

- understand and be able to describe the fundamental features, the role, electrical parameters, operating requirements and limitations as well as safe application and handling of these important and complex power components within a power system
- be able to judge the operational health of the equipment
- be able to perform fundamental testing and evaluation of compliance with specifications.
- be able to judge on the fitness and correct application and management of these devices within a given power system
- have a reasonable understanding of the requirements of suitable life cycle engineering management of these components.
- be able to support the planning, specification, technical evaluation, installation, and testing, operating and maintenance processes of these devices.

## About the Venue

The NETGroup Academy's training facility offers two multiple purpose instruction rooms each comfortably accommodating up to 20 students in multiple desk layouts. Depending on the seating configuration, the rooms may accommodate lecture-style instruction or encourage interaction in the form of roundtable discussions and teleconferences.

Teas and lunches are arranged with the on site cafeteria and ample parking is available for students.



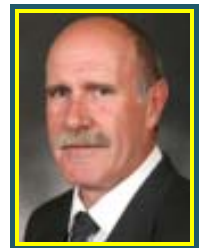
As a training facility for adult professionals, the NETGroup Academy offers a flexible and technologically-advanced learning environment that is safe, healthy, comfortable, aesthetically-pleasing, and accessible. Business stations and wireless access points with **complimentary Internet access** are available to allow students to carry out some business functions or to quickly connect with their organizations if need be during or between their training sessions.

## Your Course Facilitators

### Olaf von Abo

M.Dip. Electrical H.C.

Chief Design Eng.  
NETGroup SA



Olaf has some 22 years practical experience in the Protection of High and Medium Voltage Transmission and Distribution networks.

Execution of projects for various utilities and large industrial companies in network and plant commissioning, audits, design, specification, power system analysis, protection coordination studies and project management has earned him wide regard as industry expert.

### Hennie Harmse

Pr. Eng. B.Sc. (Elec.).  
MSAIEE



Hennie holds in excess of 30 years experience in Power System Protection, Control and Measurement and the Management of Transmission and Distribution Systems. He has been actively involved in Power System training since 1994.