



## Power System Performance & Control

### Course Overview

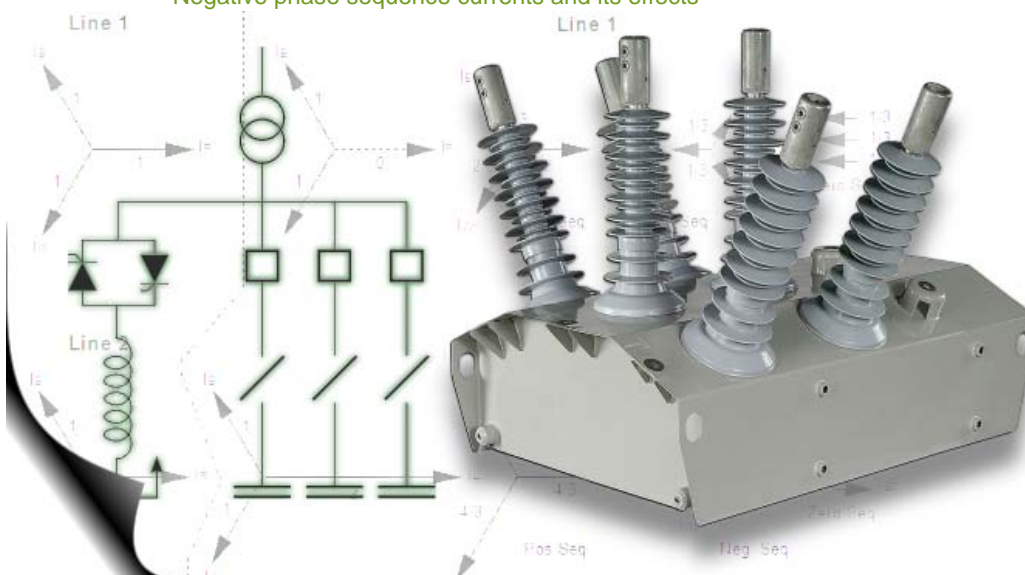
Power System Performance and Control is an essential topic for the operational management of any electrical power generation, transmission, distribution and reticulation system.

This course aims to provide electrical professionals with a clear understanding of the characteristics, dynamics and key parameters of an interconnected power system and the secure management of it. It explains the physical characteristics and parameters that need to be managed and controlled on a continuous and ad-hoc basis in the power generation and delivery process.

The course further provides an understanding of the management of system supply continuity and security, and outlines emergency measures to maintain supply quality and prevent total collapse of a system.

### Topics

- Conventions for mathematical expressions of power flow;-
  - Active and reactive power
  - Power import and export
  - Leading and lagging currents
  - Inductive, capacitive and resistive currents
- Voltage and frequency control and load shedding
- Control of fault level and multiple neutral earthing
- Stability, single pole tripping and auto re-closing
- Power swing and out-of-step
- Fast generator excitation control
- Power line unbalance due to one open phase
- Negative phase sequence currents and its effects



# 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 2 CPD points.

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



0861 NET GRP  
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## Outcomes

When you have completed this course, you will:

- understand and be able to describe the fundamental features and dynamics of an interconnected power system, the operational requirements, limitations and complexity of the management task
- be able to judge the operational health of the equipment
- be able to perform some testing and evaluation of compliance with specifications.
- be able to judge on the fitness and suitability of these devices to a power system
- have a reasonable understanding of the requirements of suitable engineering management of these components.
- be able to support the planning, specification, technical evaluation, installation, 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.



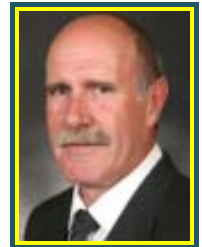
As a training facility for adult professionals, the NETGroup Academy offers a flexible and technologically-advanced learning environment that is safe, healthy, comfortable, aesthetically-pleasing, and accessible. Business stations and wireless access points with **complimentary Internet access** are 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.