

## Partial Discharge Analysis of Substation Plant (with the focus on detection and interpretation)

### Course Overview

This course equips the attendee with the knowledge of Partial Discharge (PD) theory, testing and analysis. PD tests have become essential in assessing the insulation of substation plant. As such it is of paramount importance to understand PD Testing at the factory (as per IEC60270) and onsite. PD testing is a versatile tool that can be used in most substation plant such as power transformers, current and voltage transformers, switchgear (metal enclosed and GIS) and cables. Its effectiveness however is greater dependent on the detection sensor used and the interpretation of the results. Hence the Congru specialist will train you to differentiate between the different sensor technologies and the interpretation of their results. The course gives a practical appreciation of PD testing using local case studies.

### Course Outline

- What is Partial Discharge and why do is it so important to detect
- History of PD Testing and Recognition
- High Voltage Insulation Materials
- Electric Fields Essentials
- Partial Discharge Theory
- IEC 60270 test methods
- Detection Technology
  - High Frequency Current Transformer
  - Transient Earth Voltage
  - Ultra-High Frequency
  - Acoustic and Ultrasonic
- Case Studies on the Detection and Interpretation of PD in:
  - Transformers
  - Switchgear
  - Cables
  - Current and Voltage Transformer
- Survey vs Permanent Online Monitoring



### Learning Outputs

- Understand the fundamental concepts of PD origins and its effect on insulation
- Gain insight into IEC 60270 Factory Tests Method
- Learn the technology behind detection sensors and their appropriate application
- Understand the interpretation of PD results on various substation plant

### Target Audience

Electrical Engineers, Technicians, Technologists, Maintenance Electricians, Managers, Supervisors, and other technical staff involved in testing and condition assessment of transformers.

### Duration

1 Day

### Venue

Pretoria and Durban

### Presenter

Kamendren Govender (*BSc Eng*) *Pr Eng*

Kamendren has been involved in onsite PD testing and analysis on a wide range on plant across the energy sector since 2005. He has developed significant skill on dry type and oil immersed transformers. Kamendren has been involved in PD testing of Africa's largest GIS systems. He has been the technical lead in more than 1 500 pieces of plant which included onsite testing and interpretation. He together with the Congru Solutions team brings a wealth of experience in the survey and permanent monitoring of PD.

*Interested in this course, then contact us:*

Luwendran Moodley	<a href="mailto:lmoodley@congru.co.za">lmoodley@congru.co.za</a>	+27 (0) 79 515 5164
Kamendren Govender	<a href="mailto:kgovender@congru.co.za">kgovender@congru.co.za</a>	+27 (0) 79 501 6887