Assessing the Mechanical Integrity of Transformers

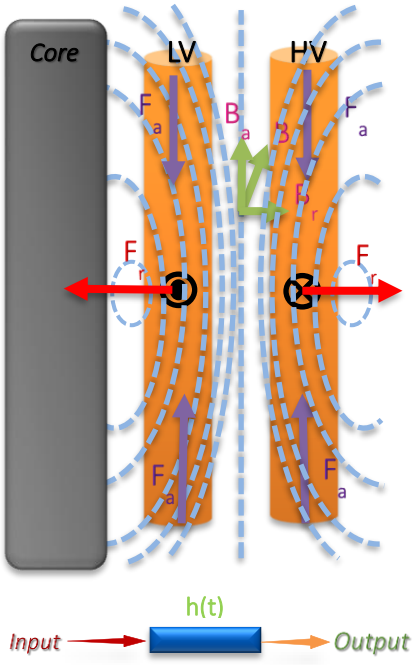
(with a focus on Sweep Frequency Response Analysis and Leakage Reactance)

Course Overview

This course equips the attendee with the vital knowledge of Sweep Frequency Response Analysis (SFRA) and Leakage Reactance (LR) tests. These diagnostic tests are essential when assessing the transformers ability to withstand mechanical stress. These stresses typically arise from electromagnetic forces during short circuit events or stresses that arise from careless transportation of the power transformer. SFRA and LR testing has become mandatory tests both at the factory and onsite and the ability to interpret these test results is paramount for asset managers to make informed decisions. The Congru specialist will train you to make sense of the traces and numbers, so it is clear and easy to understand.

Course Outline

- Mechanical Stresses
- Mechanical Failure Modes
- Condition indicators and diagnostic tests
- Sweep Frequency Response Analysis (SFRA)
    - The physics of electromagnetic forces
    - IEC and mechanical Stress
    - Mechanical structural components
    - Frequency Response and Transfer Function
    - Test setup and measurements
    - Interpretation in the absence and presence of baseline responses
    - Practical case studies of South African transformers
- Leakage Reactance (LR)
    - The physics of transformer fluxes
    - LR with respect to the geometry of the windings
    - Test setup and measurements
    - Interpretation
    - Practical case studies of South African transformers
- Developing Health Indices that incorporates mechanical condition



Learning Outputs

- Understand mechanical stresses and their failure modes on transformers
- Understand the principles of both Frequency Response and Leakage Reactance
- Understand the onsite measurement method
- Ability to assess SFRA responses and make sense of the Leakage Reactance numbers
- Improve asset management decisions by understanding the mechanical condition of your transformer

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

Luwendran Moodley *(BSc Eng) Pr Eng*

Luwendran performed his first SFRA test in 2001 when the technology was still in development. He published his first paper on his SFRA findings in 2006. Since then, he alongside his colleague Kamendren Govender have been involved in the analysis of over twenty thousand SFRA traces and has established a database of different types of winding deformation and displacement for transformers in Africa. As such he is known as the *"go-to-guy"* for SFRA analysis.

Interested in this course, then contact us:

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