



INDUSTRY & ACADEMIC EXPERTS

Dr. Thomas Smolka Managing Director Reinhausen Australia	Thomas is a specialist in grid planning, grid integration of dispersed generation units based on renewable energies. Thomas has been responsible for the business development of voltage regulation distribution transformers (VRDT).
Alan Brown Snr. Service Engineer Reinhausen Australia	Alan joined Reinhausen Australia in 1999 and for the last 18 years has been an integral part of the service division, being MR's most experienced OLTC technical specialist.
TBA ABB Australia	
Mike Elms Principal Engineering Technician Substations Western Power	Mike Elms has been employed with Western Power / predecessors for 34 years. Mike has extensive network field experience, including maintenance/network response of transmission and distribution HV installations.
Ross Kempnich Technical Operations Mgr Essential Energy	Ross is the Technical Operations Manager for Essential Energy. He has worked for 36 years in this utility. He has "hands on" experience with tap changers. He is involved in the testing, maintenance, and condition assessment of HV Plant.
Karl Haubner Doble Australia/High Voltage Solutions.	Karl joined Doble in 2004 and is employed as the High Voltage Test Application Engineer servicing the Asia-Pacific region. Karl has worked as the Superintendent of the HV Test Laboratory for Western Power.
Dr. Wenyu Guo OMICRON Australia	Wenyu Guo has been with OMICRON Australia as a Field Application Engineer since 2012. He is also the Asia-Pacific Regional Application Specialist for power transformers testing.
Dr. Hui Ma University of Queensland	Research Specialist in condition monitoring, diagnostics, HV Engineering & Insulation and machine learning.
Dr. Dan Russell Network Control Engineer Energy QLD	Industry experience in power transformer & tap changer maintenance, testing & failure investigations.

ALL enquiries ✉:transformer@itee.uq.edu.au



PRICING

TIC MEMBERS

PLATINUM

Platinum Attendee

Complimentary (Conditions Apply)

Additional Platinum

Member Attendees \$1300 pp.

GOLD

Member Attendees: \$1500 pp.

NON TIC MEMBERS

ONE ATTENDEE \$1650 pp.

Three or more Attendees
(10% DISCOUNT)

All prices are inclusive of GST.

REGISTER ONLINE AT:

<http://www.itee.uq.edu.au/TIC-cpd>

Registrations close 5/2/18
(Unless all places filled earlier)

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Power Transformer Tap Changers- Design, Maintenance & Retrofit

2 Day CPD Advanced Course

14–15 Feb 2018

At



THE UNIVERSITY OF QUEENSLAND AUSTRALIA

St. Lucia Campus Brisbane



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Key Learning Outcomes:

- Understand the basic principles of tap changers, including oil, vacuum.
- Learn the basic arrangement of regulating windings, benefits and issues of oil and vacuum diverters. Tap changer considerations for renewables and grid integration.
- Understand tap changer designs and applications, differences between diverter and selector type, Loading capability, the effects on transformer windings.
- Become familiar with OLTC maintenance for oil and vacuum types. Witness live of diverter maintenance, steps to take for high diverter moisture content.
- Participate in a forum for OLTC fault investigation and supply restoration.
- Understand MR & ABB retrofit options where oil diverters are replaced by vacuum.
- Understand the benefits of dynamic resistance tests.
- Be informed of innovative condition assessment of tap-changers using acoustic measurements, signal processing techniques used and results from field trials, case study.
- Be exposed to how some utilities are implementing life cycle oriented maintenance of tap changers.
- Learn about high moisture issues in diverters, DGA assessment, life extension.
- Learn about OLTC failures due to silver sulphide formation.

COURSE OUTLINE-Tap Changers

DAY 1—14 February 2018

Tap Changer Principles– Basic switching principle of On-Load Tap-Changers, Design principles of oil type OLTCs, Vacuum switching technology in OLTCs, OLTCs and alternative insulation liquids.

Tap changer Design and Applications-

Basic arrangements of regulating windings, Examples of commonly used winding schemes, Vacuum vs Oil Diverters, benefits and issues Tap changers considerations for the renewables. Live demonstration of GRIDCON® iTAP/ECOTAP® VPD operation for distribution transformers.

Tap Changer Designs and Applications:

Practical differences between diverter type and selector type. Protective devices for tap changers.

Key standards/guidelines. How are tap changers tested in the factory and what site acceptance tests/inspections should be carried out? Loading capability of OLTC's vs Transformer. The effects on transformer windings during operation of OLTC.

Maintenance of OLTCs -Manufacturers Recommendations

What are key items to consider? Steps to take for high moisture content in tap changer diverters. Extent of tap changer maintenance for oil and vacuum type tap changers, Live demonstration of diverter maintenance, Cost-benefit analysis / Case studies

Forum - OLTC fault finding and restoration.

What steps to take when an OLTC has failed? System emergency- Can your transformer be returned to service with a faulty OLTC (fixed-tap)? What options must be considered for OLTC repairs?

DAY 2—15 February 2018

Retrofit Options for Tap Changers during Tx mid-life refurbishments

Technical options for MR/ABB OLTC's, Justification and Benefits, Project examples for replacing oil type diverter with vacuum diverters

Tap Changer Field Testing.

Case study -benefits of dynamic resistance measurements

Condition assessment of tap-changers using acoustic measurements ?

Signal processing techniques used. Results from field trials. Case study

Implementing Life cycle Oriented Maintenance -Utility Experience

Life cycle management – Utility Companies perspective

Silver Sulphide Encounters, DGA assessment of OLTCs including high moisture, maintenance testing & anomalies, maintenance strategies:– time based or condition based? OLTC Retrofit examples during mid-life refurb

Group sharing experiences/questions–

Participants share how their organisation is implementing tap changer life cycle management, what are key issues?, case studies, questions.

Who Should Attend?

- Procurement, Asset Strategists, maintenance managers and engineers.
- Generation, transmission and distribution personnel.
- Consultants, designers and operations staff in the renewables, manufacturing, mining, industrial and infrastructure organisations.

Course numbers are **LIMITED**.

Book NOW to secure a place.

Register via the link at:

<http://www.itee.uq.edu.au/TIC-cpd>

