

# ONLINE ASSESSMENT AND MANAGEMENT OF WATER IN TRANSFORMERS

COURSE 2021

The background image shows a close-up of a transformer's internal components. A blue pressure gauge is visible on the left, and a yellow warning sign with a lightning bolt symbol and the text "POD NAPIĘCIEM" (Under Voltage) is on the right. The transformer is white and has various pipes and valves. The image is overlaid with a dark grey diagonal band and a yellow triangle in the bottom right corner.

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## COURSE OVERVIEW

This course is intended for those working in the asset management of an electrical plant, in project management, and design of high voltage substations.

Its primary focus will be on the online moisture monitoring and diagnostics, as well as online continuous drying of oil-filled transformers.

The course is filled with case studies and practical industry examples, serving to expand participants' technical knowledge.

# DR OLEG ROIZMAN

Dr. Roizman is a founder and Managing Director of Intellpower Pty. Ltd. in Australia, an engineering consulting and services company with emphasis on continuous online monitoring and diagnostics of power transformers.

Having over 30 years of experience, Oleg is world renowned for the development of intelligent solutions for power electrical engineering in the field of diagnostics, monitoring and life management of electrical plants.

Dr. Roizman has a Ph.D in Electrical Engineering and a Bachelor of Science in Electrical Engineering and Economics (Hons.). Oleg is a sought-after speaker, educator, a member of IEEE Transformer Committee, a member of various CIGRE working groups and has written over 30 technical papers.



# WHO SHOULD ATTEND?

The course is intended for anyone interested in understanding problems and solutions associated with managing key assets

of an electric utility. Attendees will include utility engineers and technicians, business and strategy staff, regulatory compliance staff, and all those involved in day-to-day asset management. Previous technical training/education is helpful but not necessary.





A close-up photograph of a transformer breather. It features a cylindrical mesh filter inside a white plastic housing, which is mounted on a metal flange. A small control box is attached to the side. The background shows a dark, industrial setting with a metal fence.

## LESSON 1: FUNDAMENTALS OF WATER IN TRANSFORMERS

- Water in Transformers – why it matters?
- Understanding water parameters- why so many?
- Sources of water contamination
- Moisture equilibrium and its distribution in paper/oil system

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## LESSON 2: ON-LINE MOISTURE MONITORING AND DIAGNOSTICS

- Why moisture is most recommended parameter for online monitoring practices
- On-line vs on-load monitoring
- Moisture sensors: how they work and what they measure
- How and where to install moisture sensor
- Not all moisture sensors created equally!
- Calibration, accuracy, measurement uncertainty and drift
- What to look for when selecting a moisture sensor vendor
- Online moisture assessment analytics
- Ranking of transformers based on online moisture assessment
- Case studies



## LESSON 3: ON-LINE MONITORING OF TRANSFORMER DEHYDRATION PROCESS

- Methods and equipment for online moisture dehydration
- Industrial adsorbent materials and their use for moisture dehydration
- Mobile dry-out systems monitoring and control
- Self-dehydrating breathers – first line of defence
- Permanently connected oil dryout machines and its continuous monitoring
- Case studies
- Your Questions Answered





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