

DEVICE TO STUDY EFFECT OF TEMPERATURE ON CORROSIVE SULFUR FORMATION RATE



THE INVENTION

This invention is a new experimental setup that has been designed, developed, and tested for studying effect of temperature on rate of corrosive sulfur formation in power transformers. The invention conforms to the CIGRE TF A2.32.01 standard for testing the transformer oil characteristics.

MARKET

- The global electric transmission and distribution equipment market is expected to reach an estimated \$304 billion by 2022 and is forecast to grow at a CAGR of 6.2% from 2017 to 2022 [1].
- Transformer loss ranked third among the top five losses and cost Global clients a combined US\$339 million dollars in lost revenue (2008-2013) [2].

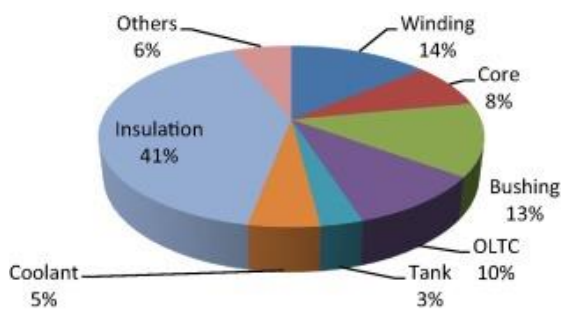


Fig.1 Failure statistics of power transformer - component based failures.

Insulation failure leads to arcing; causing the insulator oil to heat, and eventually the transformer explodes!

COMPETITIVE ADVANTAGE

- The invention provides a portable setup that can be used for on-site testing as opposed to time consuming laboratory experiments.
- The amount of time required to do the tests and deliver the results is significantly reduced.
- All types of transformer oils can be tested with this setup. The proposed setup is portable and can be used under all weather conditions

PROJECT STATUS

The invention in its current state is at Technology Readiness Level (TRL) 4. The device has been assembled and three different grades of transformer oils have been tested for their properties. The results conform with the ones obtained from the laboratory.



Fig.2 Power transformer oil measurement setup.

LOOKING FOR A DEVELOPMENT PARTNER

KFUPM would like to talk to companies and partner in performing additional experiments for different oil types and ultimately to license the intellectual property.

PATENT PROTECTION

A patent application US14/857332 covers the technology.

ABOUT KFUPM

King Fahd University of Petroleum & Minerals is a leading educational organization for science and technology. KFUPM Innovation & Technology Transfer is the IP management and technology licensing office tasked with taking innovation from lab to market.

For further information please contact:
Email: skfarooq@kfupm.edu.sa
Telephone: +966-13-860 8695

[1] Global transformer market trends, Banovic, M., *Transformers Magazine*, 2017.

[2] Transformer failure II, Gulla, B., *Reason - FM Global*, 2014.