



TCA®

Transformer Condition Assessment

comprehensive Assessment,
greater Reliability

transformer condition assessment

The most easily accessible and efficient way to determine transformer condition is to use the the fluid as the diagnostic medium. It has been estimated that transformer fluids contain about 70% of the available diagnostic information for transformers. The challenge is to access and use it effectively. Traditional oil-test programs utilize only a few diagnostic parameters leaving a myriad of important oil-based information unused. Surveys of failed transformers have revealed that many failures can be attributed to manageable problems involving the insulating fluid or from diagnostic information obtained from analyzing the fluid.

To meet the demand for an improved transformer management tool, TJH2b has developed Transformer Condition Assessment, TCA®. TCA® offers a comprehensive assessment of the dielectric and mechanical state of the transformer through the analysis of the transformer insulating fluid. The TCA® test selection includes application from the field of microscopy, providing a better understanding of the problems and risks associated with continued transformer operation.

benefits

- **comprehensive diagnostics.** TCA® integrates test data, analyzes trends and provides important information for the life management of transformers.
- **optimized transformer use.** Information about the dielectric and mechanical state of the transformer provides for better management of loading.
- **greater reliability.** TCA® provides assistance for fault management and corrective procedures leading to a reduction in failures and an enhancement in reliability.

service highlights

One of the principle advances in accessing diagnostic information from transformers has come from the the identification of suspended and sedimented particles found in the transformer insulating oil. Particles provide information about processes and events, past and present, taking place within the transformer. Integrating the analysis of particle data with traditional test data is a very powerful tool for understanding the underlying mechanisms at work in a transformer experiencing abnormal conditions or for evaluating a transformer's aging status.

In the image below (figure 1) a transformer oil sample was analyzed using Analytical Light Microscopy. Dissolved Gas Analysis (DGA) results had revealed that heating gases and carbon oxide gases were present at elevated levels, suggestive of a hot spot in the transformer. The microscopic analysis confirmed this hot spot condition with the presence of charred paper in the oil.



Figure 1
Oil Sample Analyzed by
Analytical Light Microscopy

The TCA® testing program includes:

- Dissolved Gas Analysis
- Insulating Fluid Quality Assessment
- Particle Analysis
- Furan Analysis
- Diagnostic Evaluation