



less Maintenance, higher ROI

breaker oil analysis

Time or predictive-based internal inspections of oil-filled circuit breakers (OCBs) are costly and can result in significant opportunity costs. Occasional failures can lead to reduced system availability, lost revenue from outages, potential collateral damage, and compromised worker safety. TJH2b's Breaker Oil Analysis (BOA®) was designed to address these concerns by determining the in-tank condition of OCBs by applying various test methods to analyze the insulating fluid contained within the OCB tank. Based on the results of these tests, decisions can be made that determine when units are in need of internal maintenance and that allow for the prioritization of maintenance. BOA® is noninvasive, reliable, and easily implemented.

benefits

BOA™ provides several maintenance and financial benefits, including:

- **less maintenance.** Typically, maintenance is required on only 3-5% of units annually.
- **effective personnel deployment.** BOA® enables companies to defer OCB maintenance, ensuring the best possible deployment of personnel to support critical infrastructure and maintenance needs.
- **improved scheduling.** BOA® facilitates easier scheduling processes in terms of manpower allocation and preparation for repairs.
- **improved ROI.** The potential savings in maintenance costs can be quite significant and as equally important, costly failures can be averted. A typical ROI (Return on Investment) is in the \$ 5-10 range.

service highlights

experiences with BOA

Since 1998, TJH2b Analytical Services has tested the insulating oil contained within more than 40,000 tanks from distribution and transmission oil-filled circuit breakers. Implementation of BOA® has a clear advantage over conventional approaches to maintenance. The common finding from extensive evaluations of both predictive and time-based maintenance approaches is that maintenance is not performed efficiently because a significant number of OCBs do not require internal inspections. The objective with BOA® is to perform maintenance on the right units at the right time.

Utilities that have implemented BOA® have found that the deferral of internal inspections has not compromised reliability. Used with other maintenance tools as a part of a condition-based maintenance program, BOA® can enhance reliability as shown in the example below (table 1.)

Six Years After Implementing BOA™ - Actual Utility Data

Year	Total OCBs	Total Code 4 OCBs	Total OCBs Tested	Total OCB Overhauls	Total OCB Interrupter Failures
1	2420	48	639	332	4
2	2420	39	422	232	5
3	2420	11	678	176	3
4	2420	26	521	42	3
5	2420	28	527	54	1
6	2420	23	312	68	0

Table 1 - BOA Six-Year Results