

WEIDMANN KNOWLEDGE SERVICES

TRANSFORMER FLEET ASSESSMENT

A fleet assessment summarizes the health of existing in-service assets and prioritizes the need for maintenance, monitoring, further investigation, or continued service.

Transformers are a critical part of today's electrical grid and form the backbone of the modern network. In order to ensure grid reliability, it is essential that transformers are operated optimally, with minimum risk of failure or unplanned outages.

A fleet assessment provides grid operators the following:

- Concise overview of fleet assets (Transformers, load tap changers (LTC's) oil circuit breakers (OCB's), voltage regulators, reactors, etc.)
- A clear understanding and ranking the condition of a transformer fleet
- Identification of 'high risk' units in your network
- Receive clear action items to better assist operational decisions
- A tool to reduce operating costs by performing condition based maintenance versus time based maintenance
- Actionable next steps to maintain reliable condition of assets

When reviewing the results of a fleet assessment, grid operators will receive, for the first time, a true picture of where risks exist across the entire fleet. This enables the operator to put risk mitigation plans in place through increased maintenance schedules, a change in decommissioning plans, or other needed measures.

"NOT ALWAYS THE OLDEST TRANSFORMER IN THE FLEET REQUIRES THE MOST ATTENTION."

With Weidmann's fleet assessment service, we use your data to create a detailed overview of which transformers pose the highest threat to network stability.

An analysis is completed using oil sample data and available history for each asset in your fleet. The summary report incorporates IEEE standards and is reviewed by Weidmann engineers using our extensive experience of equipment analysis.

Weidmann offers a comprehensive platform of products and services that enable improved lifecycle management of transformers.

RECOMMENDED LABORATORY TESTS FOR COMPLETE EVALUATIONS ARE:

- Dissolved gas analysis
- Moisture content
- Dielectric breakdown strength
- Power factor at 25 °C and 100 °C
- Acid number
- Interfacial tension
- Color analysis
- Visual analysis
- Furan analysis and/or Methanol analysis
- Inhibitor content



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EXAMPLE OF A FLEET ASSESSMENT CHART

The data is then presented in a summary that ranks the condition of the assets in your fleet based on IEEE calculations and good engineering judgment. Additionally, clear guidance is provided to operators for making future maintenance and capital investments to ensure grid reliability.

Transformer Fleet Summary Report								14 Normal
Weidmann Electrical Technology								0 Caution
								1 Warning
Equipment Type	MFR YR	Fluid Type	DGA	GOQ	Est DP	Overall 2023	Resample Interval	Comments - 2023
XFMR	1992	MIN	C	C	C	W	3 months	Ethylene generation indicates a high thermal fault > 700 °C. Furan analysis indicates breakdown of the paper insulation. Oil color is increasing and dielectric decreasing. This unit is in need of maintenance.
XFMR	1992	MIN	C	N	N	C	6 months	The calculated generation rate of methane and ethylene show there may be active gassing. Although there is not active fault at this time, DGA previous to 2021 may have indicated a fault and it may be returning. Increase sampling interval to 6 months.
XFMR	1997	MIN	N	C	N	C	1 year	IFT is low, color is increasing, trace amounts of sediment, low dielectric at last 3 samples, the oil is oxidizing and sludge may be beginning to form in the oil consider maintaining the oil.
XFMR	1992	MIN	C	N	N	N	1 year	Generation rate may indicate continued gassing, however after fault analysis all gas levels are normal
XFMR	1992	MIN	C	C	N	N	1 year	Generation rate may indicate continued gassing, however after fault analysis all gas levels are normal. Some trace sediment may be contributing to a lower dielectric result - ensure complete flushing and cleaning of the sample valve. Second sample with a low dielectric. Re-evaluate at next sampling
XFMR	1992	MIN	C	N	N	N	1 year	The calculated generation rate of CO and CO2 may indicate active gassing, however the ratio and fault analysis do not indicate any fault at this time.
XFMR	1992	MIN	C	N	N	N	1 year	The calculated generation rate of Ethylene and CO and CO2 may indicate active gassing, however the ratio and fault analysis do not indicate any fault at this time.
XFMR	1992	MIN	C	N	N	N	1 year	The calculated generation rate of Ethylene and CO may indicate active gassing, however the ratio and fault analysis do not indicate any fault at this time.
XFMR	1992	MIN	C	C	N	N	1 year	The calculated generation rate of CO and CO2 may indicate active gassing, however the ratio and fault analysis do not indicate any fault at this time.
XFMR	1992	MIN	N	C	N	N	1 year	The dielectric is below the limit for in-service mineral oil, however there was some light sediment in the oil and may be due to the sampling valve, ensure proper flushing of bottle and valve when sampling. Re-evaluate at next sampling
XFMR	1992	MIN	N	C	N	N	1 year	The IFT in this unit is low, however there are no other indications that the oil is breaking down, re-evaluate at next sampling
XFMR	1992	MIN	N	C	N	N	1 year	The IFT in this unit is low, additionally the color is getting darker, however there are no other indications that the oil is breaking down, re-evaluate at next sampling
XFMR	1992	MIN	N	N	N	N	1 Year	Water was visible in the bottle that is tested for general oil quality. Please ensure properly sealing bottle and completely flushing the sampling valve.
XFMR	1992	MIN	N	N	N	N	1 Year	Normal
XFMR	1992	MIN	N	N	N	N	1 Year	Normal

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