

OIL QUALITY ASSESSMENT

Checking the functionalities of transformer oils

WHAT?

Laborelec trends the quality of insulating oils in service to assess to what extent these oils retain their functional properties such as cooling, chemical stability, and electrical insulation.

WHY?

To assess whether the insulating oil meets international standards (for instance IEC 60422 or IEEE C57.106) and/or the specifications from insurance companies.

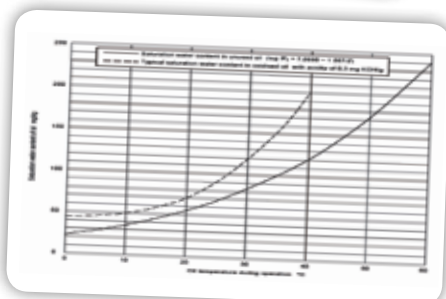
To avoid premature ageing of transformers, high maintenance costs, or transformer failure induced by insufficient cooling or insulation.

HOW?

Oil quality can be accurately assessed by combining the results of different physical, chemical, and electrical oil analyses (water content, acidity level, breakdown voltage, tan delta, et cetera). If certain parameters prove to be insufficient, we determine which maintenance actions are required (dehydration, oil filtering, passivation, internal inspection, online monitoring, among others).

We always determine the most appropriate analysis package and sampling frequency as a function of the type of transformer and its properties.

Frequency of analysis:
every 12 to 48 months



ANALYSIS	METHOD	REQUIRED OIL VOLUME
Breakdown voltage (**)	IEC 60156	500 ml
Chlorine	Laborelec method	100 ml
Color and appearance	ISO 2049	50 ml
Corrosive sulphur	IEC 62535	50 ml
Corrosive sulphur	ASTM D1275B	250 ml
Corrosive sulphur (after resin treatment)	IEC 60296	100 ml
DBDS	IEC 62697	50 ml
Density (**)	ASTM D4052	50 ml
Dielectric dissipation factor	IEC 60247	100 ml
Dissolved metals	ASTM D7151	100 ml
Filtration (0,8 µm)	ASTM D4055	200 ml
Flash point (Pensky Martens CC)	ASTM D93/ISO 2719	200 ml
Inhibitor (DBPC) (**)	IEC 60666	50 ml
Interfacial tension (IFT)	ASTM D971	150 ml
Metal desactivator (Irgamet 30)	Laborelec method	50 ml
Metal passivator (Irgamet 39)	IEC 60666	50 ml
Metal passivator (TTA and BTA)	IEC 60666	50 ml
Neutralization index, acidity (**)	IEC 62021	25 ml
Particle counting	IEC 60970	100 ml
Pour point	ISO 3016	100 ml
Resistivity (alternative fluids)	IEC 60247	100 ml
Resistivity (mineral oil)	IEC 60247	100 ml
RPVOT	ASTM D2112	100 ml
Sediment and sludge	IEC 60422	100 ml
SEM/EDX (*)	Laborelec method	
Stray gassing	ASTM D7150	500 ml
Structural Analysis	IEC 60590/Brandes	25 ml
Viscosity (**)	ASTM D7042	50 ml
Water content	IEC 60814	25 ml



(*): Scanning Electron Microscope/Energy Dispersive X-ray spectroscopy
(**): Analyses performed under ISO 17025 accreditation – Measurement of uncertainties available on demand