

Optical Diagnosis Services for Deterioration of Molded Transformers

MOLMOS Moltra Multi-optical Diagnostic System

Easily diagnose the degree of deterioration of the resin in molded transformers

Deterioration diagnosis by MOLMOS

MOLMOS diagnoses the degree of deterioration (mass reduction rate) by measuring the optical reflectance in the dark surface color of the epoxy resin.

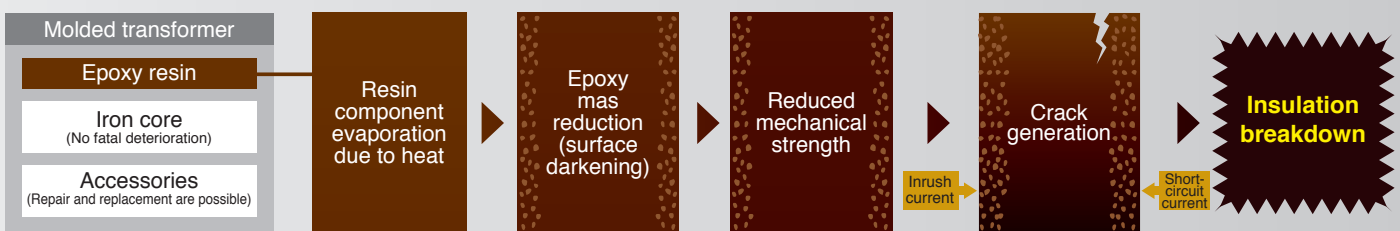


Benefits

- ✓ Evaluation of the remaining service life for optimal upgrade planning
- ✓ Evaluation of the degree of deterioration for optimal maintenance planning
- ✓ Evaluation of the quantitative degree of deterioration degree based on numerical data

Resin deterioration process and insulation breakdown

The service life of a molded transformer is greatly affected by the deterioration of its insulating epoxy resin. Epoxy resins become brittle and easily break down due to darkening and a decrease in mass caused by thermal deterioration.



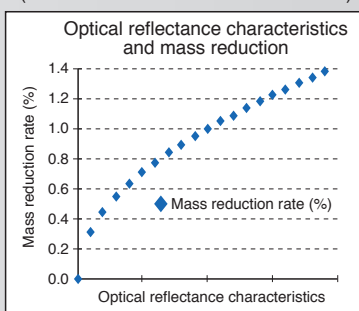
Resin deterioration diagnosis method

Optional reflectance measurement



Accelerated deterioration evaluation test

Convert optical reflectance into mass loss (Thermal accelerated deterioration test)

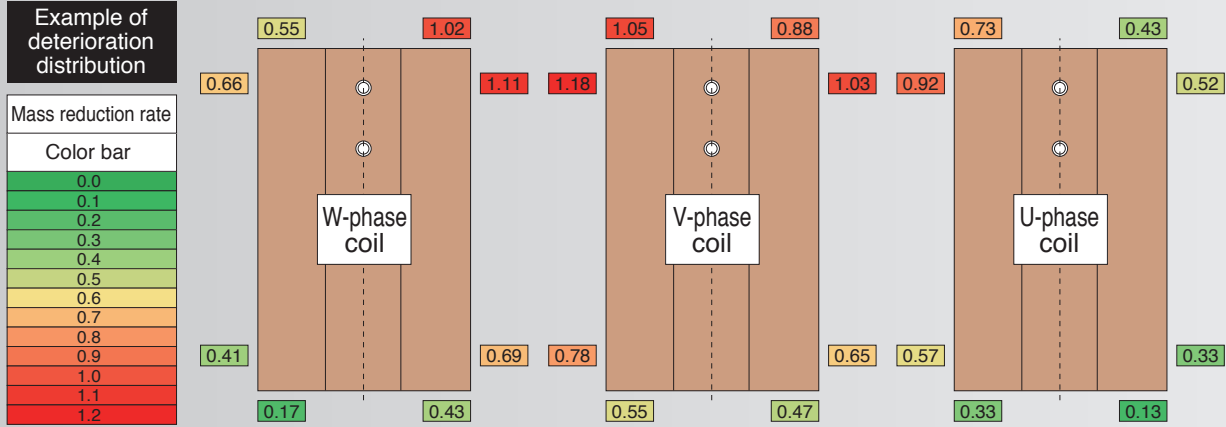


Deterioration diagnosis

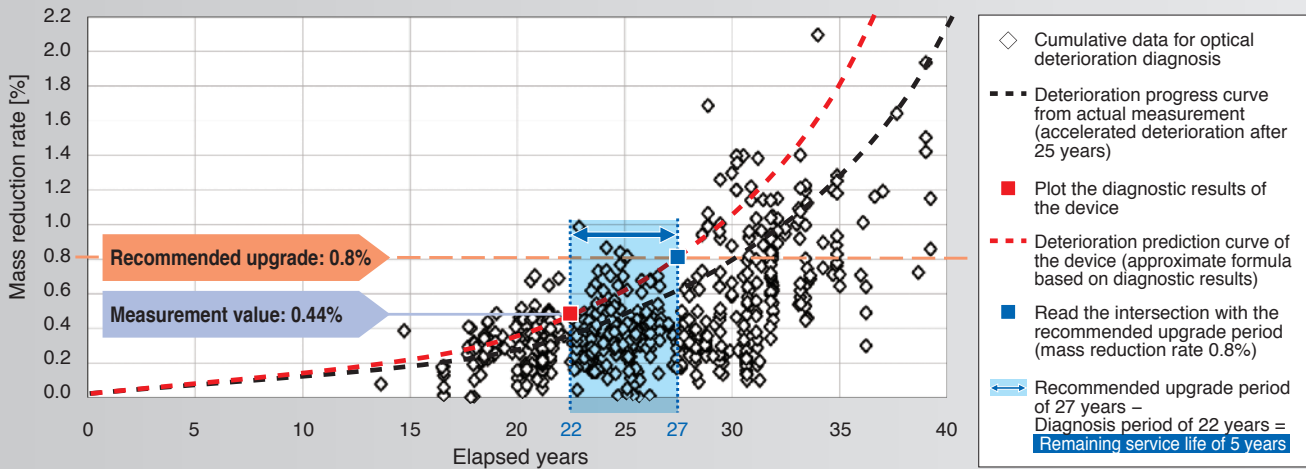
Degree of deterioration	Evaluation
End of life (Mass reduction rate of 1.2% or more)	Upgrade period
III (Mass reduction rate 0.8–1.2%)	Recommended upgrade period
II (Mass reduction rate 0.4–0.8%)	Advanced deterioration period
I (Mass reduction rate: 0.4% or less)	Initial deterioration period

Diagnosis examples

Degree of deterioration



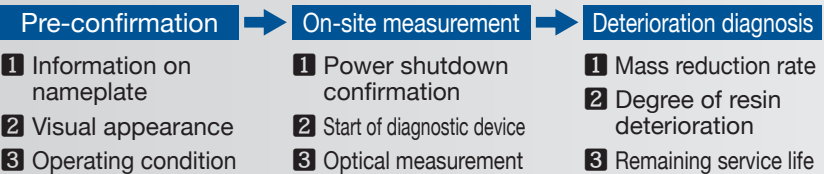
Remaining service life



Diagnostic conditions

- Equipment type: Fuji Electric extra-high or high voltage molded transformers
- Appearance: No significant discoloration, dirt, or repainting
- Environment: Capability to power down the transformer during measurement

Diagnostic flow



Diagnosis cases

As of the end of March 2023, we have performed diagnosis on 1111 molded transformers. Although day-to-day visual observations and insulation resistance measurements taken at periodic inspections were unable to find abnormalities, we will propose economical maintenance and upgrade plans based on quantitative diagnostic indicators such as the degree of deterioration and remaining service life by using optical diagnosis of deterioration.

⚠ Safety precautions

Note: Before using this product, in order to use it correctly, be sure to carefully read the Instruction Manual and Specifications, or contact our company or your dealer for information as necessary.
 Note: This product is intended to be handled by persons with specialized technical knowledge.

FE Fuji Electric Co., Ltd.

Gate City Ohsaki, East Tower,
 11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan
 Phone : +81-3-5435-7111