

# ELECTRICAL MACHINES TESTING

## POWER TRANSFORMER testing:

Dissipation factor/ Power Factor/ Tan Delta and Capacitance of windings and bushings with frequency sweep and voltage sweep “tip-up”.  
Winding Resistance.  
Turn Ratio.  
Exciting current.  
Short circuit impedance.  
Demagnetization.  
Dielectric frequency response analysis/DFRA/frequency dielectric spectroscopy/FDS.  
Frequency Response Analysis/ SFRA.  
Current transformers analysis.  
Insulation Resistance / Polarized Index.  
Partial discharge analysis on-line and off-line.

## MOTOR / ALTERNATOR testing:

Dissipation factor/ Power Factor/Tan Delta and Capacitance of windings with voltage sweep “tip-up”.  
Insulation Resistance / Polarized Index / Polarization Depolarization Current Analysis/EDA.  
Dielectric frequency response analysis / DFRA /frequency dielectric spectroscopy /FDS.  
Partial discharge analysis on-line and off-line.  
Detection, pinpoint, and document of flash-arc corona and arcing partial discharge with camera UV.  
Dielectric withstand test / Hi-pot.  
Winding Resistance.  
Impulse winding test.  
Frequency Response Analysis/ SFRA.  
Electromagnetic imperfection testing / CID.  
Pole drop testing.  
Insulation Resistance / Polarized Index.

## SURGE ARRESTER testing:

Watt losses and total current.

## INSTRUMENT TRANSFORMERS:

### CURRENT TRANSFORMER testing:

Dissipation factor/ Power Factor/ Tan Delta and Capacitance of windings with frequency sweep and voltage sweep “tip-up”.  
Dielectric frequency response analysis / DFRA /frequency dielectric spectroscopy / FDS.  
Partial discharge analysis.  
Polarity check.  
Ratio and phase accuracy.  
Winding resistance.  
Excitation characteristics (knee points).  
Composite error (ALF, ALFi, FS, FSi, Vb).  
Burden impedance.  
Transient CT classes and parameters (TPS, TPX, TPY and TPZ type CTs).  
Transient dimensioning factor (Ktd).  
Burden.  
Remanence and residual magnetism.

### VOLTAGE TRANSFORMER testing:

Dissipation factor/ Power Factor/ Tan Delta and Capacitance of windings with frequency sweep and voltage sweep “tip-up”.  
Dielectric frequency response analysis / DFRA /frequency dielectric spectroscopy / FDS.  
Partial discharge analysis.  
Ratio and phase accuracy.  
Polarity check.  
Winding resistance.  
Burden.

### CIRCUIT BREAKER testing:

Operation timing and contacts synchronism.  
Motion / Contact travel: over-travel, total travel, rebound, damping time, contact wipe, ...  
Coil current.  
Static contact resistance.  
Insulation resistance.  
The SF6 gas quality: volume percentage, moisture concentration, SO2 concentration, HF concentration, H2S concentration and CO concentration.