



**SPECTRUM**  
*an Industrial Trust...*



**Spectrum Diagnostic Laboratory & Research Centre**  
(NABL Accredited)



**SPECTRUM**  
*an Industrial Trust...*

**Protecting valuable client assets with  
analytical testing and consultancy expertise**



# OUR GROWING COMPANY

By Chief Executive Officer

Spectrum Diagnostic Laboratory & Research Centre (SDLRC), is a one-stop solution for diagnostic and testing of the transformer under the maintenance program to support effective operation and lifetime management system. In order to assist our clients to take early remedial action before possibly dangerous and costly unit failure occurs. Our laboratories are able to offer transformer oil analysis, conditioning monitoring of transformer, RLA studies, maintenance programs to determine functional parameters, suitability characteristics, insulation performance and health, safety & environmental concerns.



## OUR VISION

By SDLRC Team

We aim to be the most competitive and the most productive service organization in the world. Our core competencies in testing, verification, and certification are being continuously improved to be best-in-class. Our chosen markets will be solely determined by our ability to be the most competitive and to consistently deliver unequalled service to our customers all over the world.

## RESEARCH AT GLANCE

- 01 Ph.D Research Scholar
- 02 Patents Published
- 04 National Level Research Papers
- 22 International Level Research Papers
- 65 Apprentice Trained in Transformer Conditioning Monitoring



## SDLRC METHODOLOGY

- 01 Sample Collection
- 02 Analytical Testing
- 03 Result Analysis & Diagnosis
- 04 Data Trending & Monitoring
- 05 Report Formation



**ONE STOP  
SOLUTION FOR  
TESTING,  
MAINTENANCE,  
ERECTION &  
COMMISSIONING**



## OUR SERVICES



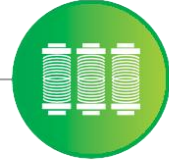
NABL LABORATORY



ELECTRICAL TESTING



DATA TRENDS & MONITORING



FACTORY REWINDING



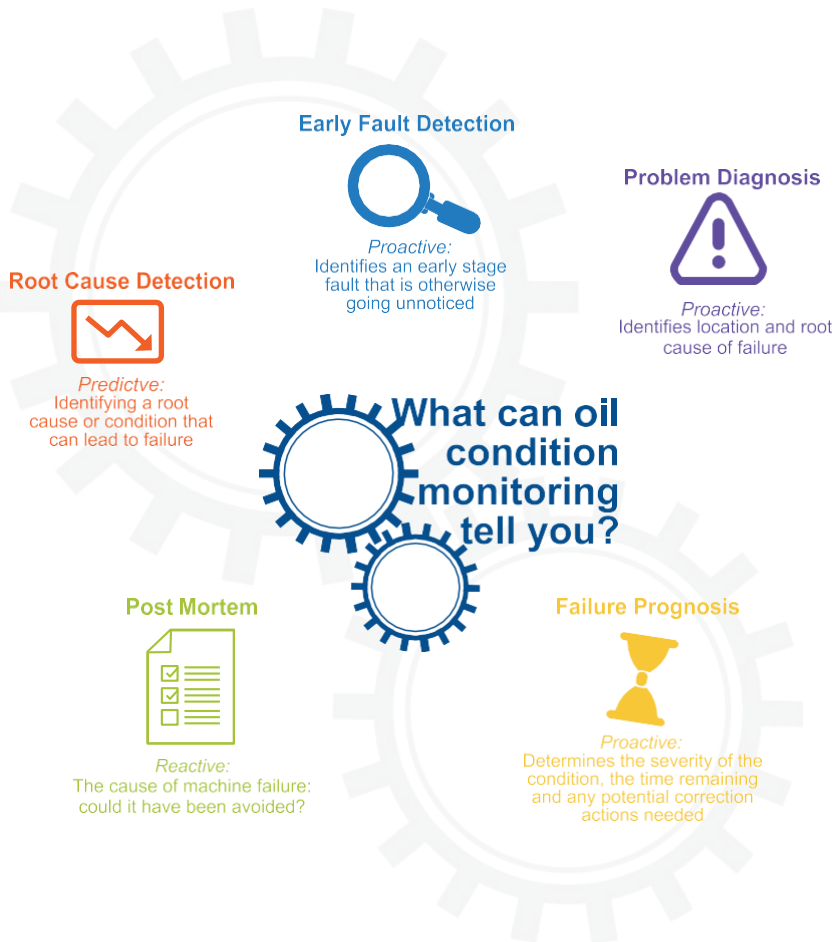
CONSULTANCY



POWER MANAGEMENT



# OIL DIAGNOSTIC



The transformer oil undergoes continuous degradation because of the electric, thermal, mechanical, and climatic stresses while operating. Therefore, oil condition monitoring plays a vital role in estimating the remanent life of the unit. Periodic testing of transformer oil is necessary to ensure a safe, economical, trouble-free, and undisturbed power supply.



## **TRANSFORMER OIL TESTING**

Transformer Oil Testing is a proven loss prevention technique which should be a part of any condition based predictive maintenance program. The liquid insulation serves as a heat transfer medium. It is therefore prudent to periodically perform tests on the oil to determine whether it is capable of fulfilling its role or not.

Routine testing of transformer oils on a regular schedule is an accepted industry practice. General and physical tests are suggested twice a year, dissolved gas analysis once a year, and Furan testing every 2 years for transformers in operation for at least 5 years.

Though the risk of failure of a transformer and other oil-filled electrical equipment is small, when failures occur, they inevitably lead to high repair costs, long downtime and possible safety risks. By accurately monitoring the condition of the oil, sudden faults can be discovered in time and outages can potentially be avoided.



## **ROUTINE TESTS**

- Colour
- Appearance
- Breakdown Voltage
- Water Content
- Acidity
- Tan Delta
- Resistivity
- Dissolved Gas Analysis
- Furan Analysis

## **COMPLEMENTARY TESTS**

- Sediments
- Sludge
- Interfacial Tension
- Particle Counting

## **SPECIAL TESTS**

- Oxidation Stability
- Flash Point
- Compatibility
- Pour Point
- Density
- Kinematic Viscosity
- PCB
- Corrosive Sulphur
- DBDS
- Inhibitor Content
- Metal in Oil Analysis
- DP<sup>v</sup>



# MAINTENANCE

## Generator Diagnostics

- Conditioning Monitoring
- Diagnostic Testing
- Stator Core & Winding
- Insulation Resistance
- Polarization Index
- Meter Calibration
- Vibration Measurement
- Infrared Camera Inspection
- Diode Wheel Check

## Power & Distribution Transformers

- Dissolved Gas Analysis (DGA)
- Furan Content Analysis
- Physical & Chemical Properties
- Corrosive Sulphur Test
- Functional Checks
- Turn Ratio Measurements
- Recovery Voltage Measurements
- Tan Delta and Capacitance
- Winding Resistance Test
- Magnetizing Current
- Magnetizing Balance
- Low Voltage Tests
- Oil Filtration
- Arresting Oil Leakages
- Bushing Replacement
- SFRA (Sweep Frequency Response Analysis)
- Meter Calibrations
- Vibration Measurements
- Infrared Camera Inspections

## Circuit Breaker Services

- Contact Resistance Measurement
- Measurement of Closing/Opening Time
- Dew Point Measurement
- Measurement of Travel & Velocity of Moving Contacts
- Assessment of Bounces

## Protection Relay & Control Panel

- Timing Characteristics
- Operation Characteristics
- Primary & Secondary Voltage Check
- Communication & Calibration
- Panel Testing & Calibration
- Energy Meter Testing



Contact Resistance Meter  
(SCOPE-100 B)



Digital 5kV Insulation  
Tester (Kyoritsu-3125a)



Digital Time Interval Meter  
for Circuit Breaker (SCOPE-)

## Transformer Services

- Tan Delta & Capacitance Measurements
- SFRA (Sweep Frequency Response Analysis)
- Retrofitting of OLTC Chamber
- Attending the Minor Leakage
- Oil Filtration Fault Diagnosis



Omicron CPC 100



Tan Delta Test Kit  
(OMICRON CP TD1)



Thermal Imaging Camera  
(FLIR E4)

## Current & Potential Transformers

- Dielectric Loss Angle measurement (Tan Delta)
- Leakage Current Measurement
- Insulation Resistance Test
- Polarity Test
- Secondary/Loop Resistance Test
- Burden Test (optional test)
- Magnetization Curve Test
- Turns Ratio Test
- Primary Injection Test
- High Voltage Test
- Commissioning Test

## Installation Services

- Installation of Transformer upto 500 MVA
- Experienced & Specialized Engineers
- Erection, Testing and Commissioning Activities

## Cable

- Tan Delta
- Online PD Measurement

## Diagnostics of Motor

- Partial Discharge  
(Electric Insulation Testing)
- Insulation Resistance
- Polarization Index
- Surge and Hi-Pot Test
- Step Voltage Test
- Electrical Signature Analysis

TESTING

# DEHYDRATION AND FILTRATION



- 6000 Liter/ Hrs. Capacity
- Ultra High Vacuum
- Double Cartridge
- Double Filter
- Inclusive of 30 Heaters
- Online BDV Testing Facility
- Make UVS

Transformer Dehydration and Filtration plays a vital role in transformer life cycle management as both of the processes shows a significant increase in transformer efficiency. To maintain the un-interruption, it is highly important to remove the water content and sludge from the solid as well as from the liquid insulation of the transformer.

SDLRC has its own Dehydration and Filtration Machine of 6 KL Capacity which is Fully automatic and highly Vacuumized and able to remove the moisture content in a couple of hours on site.



## TRANSFORMER OVERHAULING

- Dismantling of a
  - Conservator
  - Cable Box
  - Bushing
  - Top cover
- Washing of Core Coil
- Re-tightening of Clamping
- Cleaning of Tank
- Removal of Sludge/furan
- Lifting of Core
- Functional Checking of
  - Buchholz Relay
  - OTI
  - WTI
  - MOG
- Overhauling of OLTC
- Replacement of Gasket
- Winding Dehydration
- Filtration of Oil
- Motor Drive Unit check
- Cleaning of fixed contacts



**WE TEST , WE  
MONITOR AND WE  
MAINTAIN**

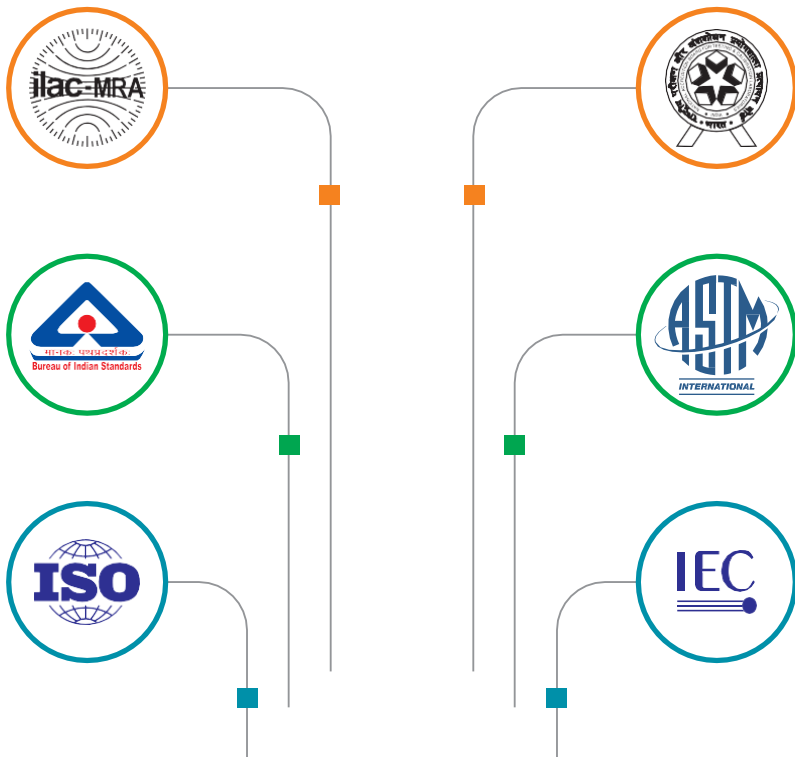


# Certificate



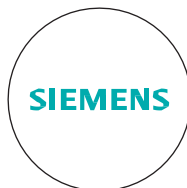


## ACCREDITATIONS & STANDARDS



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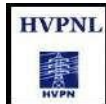
## VALUED CUSTOMER'S



## VALUED CUSTOMER'S



## VALUED CUSTOMER'S



# A STRONG AND SAFE CONNECTION

## Welcome to the team

At SDLRC you can always depend on an experienced team that actively supports you and an infrastructure that you can rely on. We always listen attentively in order to understand your needs so that we can offer you the best possible solutions. We strive for lasting partnerships and ensure that you can continue to rely on your asset long after you've conditioned it. In order to do this, we focus on quality, the transfer of knowledge and unique customer support.



### When rapid assistance is required...

...our excellent level of support is always appreciated. You can reach the highly-qualified and committed technicians in our customer support department 24 hours a day, seven days a week. We deal with transformer oil sampling, oil testing, electrical testing of power equipments, repair services and service features in a fair and non-bureaucratic manner. A comprehensive offer of services for consulting, testing, diagnostics and repairing completes our range of services.



### Solutions you can rely on...

... developed with experience, passion and an innovative approach that we use to continually set ground breaking standards in our industry sector. SDLRC engineers work with state of the art equipment to create customized engineered solutions that maximize your assets value. An extensive research database allows our experts to do comprehensive testing analysis on a large scale. So whatever your challenge, wherever it arises, we access expertise and knowledge from around the world to overcome it.



### We share our knowledge...

... by maintaining a constant dialogue with users and experts. Some examples of this are our customer events and conferences that take place all over the world and our collaboration with numerous standardization committees. We also make our knowledge available to you in our R&D section of our laboratory in the form of research papers, analytical reports, review articles and articles in the discussion forum.

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