



CHAIRMAN'S ADDRESS



Dear Team Mates,

Wish you all a very Happy New Financial Year

We just concluded our Annual Meet on 12th May, which was grandly done by our team. The vision and target was set for this financial year with a clear focus on innovation and customer satisfaction.

The covid situation in India is getting cleared and the business scenario is opening up. It is a very good sign for all of us in the field.

Our team had a successful trip and participation in Middle East Energy Dubai. The response was excellent and has encouraged us to move into international market.

The performance of our team was excellent last year. They have achieved the target last year, KUDOS to them.

Best of Luck to the team.

Thanks and Regards

M N Ravinarayan
Chairman

MIDDLE EAST ENERGY EXPO - THE DEDICATED FORUM ADDRESSING THE FUTURE OF ENERGY

The Global Energy & Utilities Forum, is a part of Middle East Energy, was a 3-day immersive experience held from 07th - 09th March 2022 at Dubai World Trade Centre, under the patronage of the Ministry of Energy & Infrastructure, UAE.

It is an engagement in strategic dialogue with the energy leaders of today and the future, the forum provides an unrivalled platform for both public and private sectors to explore critical issues, key developments, investment opportunities, and rising trends shaping the new energy ecosystem.

With the growth of renewables and a drive to improve the efficiency of electricity networks, digital technologies are transforming the distribution of power and providing grid customers with flexible and sustainable solutions.

The forum exhibits the changing requirements and expectations of networks and grid customers, the technologies facilitating the energy transition and the development of new consumer interfaces and solutions.

We at Taurus Powertronics, exhibited a very innovative solution for Generation, Transmission & Distribution utilities in terms of improving uptime by adapting condition-based monitoring tools for the energy sector which we are delivering worldwide.

A live demonstration was organised at the stall to ensure the practical application of the innovative solutions to take an immediate decision towards assessment of power transmission and substation assets.



LEAKY INSULATOR DETECTOR – LID FOR LINES

The Leaky Insulator Detector (LID) is a hand held non-destructive inspection system which utilises AC/ DC hall effect sensor and Ultrasonic technology for predictive maintenance. The Leaky Insulator Detector (LID) has a Flexible clamp sensor and Ultrasound Receiver. The Flexible AC/DC sensor is specially designed sensor to measures the AC/DC leakage current in HVAC/ HVDC Towers leg (caused due to the leaky insulator).

INTRODUCTION

The weak Insulator leaks current to ground and when the leakage current is measured by Leakage Current Detector at the tower footing, it shows higher readings of leakage current compared to other towers confirming the deterioration of the insulator. The weak insulator also produces arcing sound internally, which can be picked up by Ultrasound Partial Discharge detection method to pin point the leaky insulator.

How deterioration of the Insulators lead to Leakage Current & Ultrasound Partial Discharge:

- The Puncture insulator causes leakage current due to loss of insulation. This will lead to flow the leakage current from the tower leg to ground & can be measured with Tower Leakage Current measurement method as discussed below.
- This puncture is associated with arcing noise internally. Detection of Arcing can be done with Ultrasound Detection method as discussed below.
- Gradually over a period of time arcing will deteriorate the insulators & will fail tripping the line.

Leakage Current Facts:

- The Leakage Current is directly proportional to the Degradation of Insulator.
- Arcing & Corona: Leakage Current increases with Arcing and Corona
- Good Earthing: This helps the leakage current to dissipate quickly
- So, the high value of Leakage Current is the primary information of the Tower healthiness.

ADVANTAGES OF USING LID

- Analyzing the leakage current of the tower from the ground by tower leakage current measurement methodology will help O&M team for taking right decision towards pin pointing tentative flash over/shorted insulators.
- Ultrasound measurement methodology uses to pin point the particular string of the tower by taking leakage currents results.
- From ground level leaky Insulators can be identified. No need to climb on tower, no shut down required.
- No skill manpower required, Easy & Simple operating procedure.
- Single Instrument for all type of Transmission Line Insulators (Glass, Porcelain & Polymer).
- Single instrument to locate Leaky Insulators, Corona discharge, Loose hardware Joints & improper addition earthing installation.

Prepared by Mr. Amim Shahbaz, Senior Engineer-Product

LEAKY INSULATOR DETECTOR – LID UPD FOR SUBSTATIONS

LID-UPD is a testing and monitoring technique prevents an in-services failure of a substation &

Switchyard Equipments and panels. By practising periodic on-line testing to detect problematic component using this method we can achieve reliability based HV asset extension. It is a combination of four sensors i.e. Acoustic, TEV, HFCT & Split core Hall effect Sensor that all together is utilise to locate the predictive faults in Substation assets in online condition.

INTRODUCTION

PD is an electrical discharge that occurs across a localized area of the insulation between two conducting electrodes, without completely bridging the gap (see IEC 60270). It can be caused by discontinuities or imperfections in the insulation system. PD activity is an indication of an incipient medium voltage (MV) or high voltage (HV) insulation fault and is widely regarded as the best early warning indicator of electrical insulation deterioration in MV and HV electrical assets within power networks. In general PD occurs in systems operating at voltages of 3 kV and above; however, it should be noted that in some cases PD can also occur at lower voltages (i.e. Variable Speed Drive / Variable Frequency drive motors and LV designs). Typical drivers for implementing PD programmes include; supporting Condition Based Maintenance (CBM), avoiding unplanned, often costly.

HOW DOES PD DEVELOP?

Once incepted, Partial Discharge can develop into electrical trees and surface tracking, eventually leading to a breakdown between

phase and earth or between phases of a 3-phase system. Depending on the discontinuity or imperfection type and location in the insulation system, a failure can take anything from a few hours up to several years to occur.

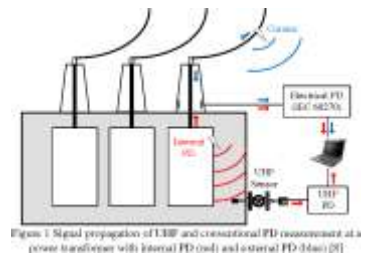


Figure 1 Signal propagation of LID and conventional PD measurement at a corona transformer with internal PD (red) and external PD (blue) [8]

While some discharges can be extremely dangerous to the health of the insulation system (e.g. discharges within polymeric cables and cable accessories), other types of discharge can be relatively benign (e.g. such as corona into air from sharp, exposed points on HV overhead networks). The key to Partial Discharge testing and monitoring is to be able to differentiate between the different types of PD which can occur and provide a reliable location, enabling remedial repair works to be conducted during scheduled outages prior to failure often causing costly outages and the associated downtime or production loss.

ADVANTAGES OF PD MONITORING & LEAKAGE CURRENT MEASUREMENT

- Measurement of Leakage Current Provide prior Information about healthiness of Transformer & Other substation equipment.
- Since no labor is required to perform the tests, continuous monitoring allows the use of limited resources to finding solutions to problems instead of finding problems.

- Reducing unnecessary maintenance because the monitor will be constantly testing and will have accurate data on which to base decisions.
- Collecting more accurate data as tests are conducted under real operating condition
- Requiring no outage to perform the test, therefore there is no loss of asset productivity.
- No introduction of infant mortality failure patterns via more invasive testing procedures.
- Reduction of forced outages and increased safety of personnel. One will always be aware of conditions and/or problems.
- Correlation of other dynamics such as temperature, humidity and load current to PD activity, which provides additional insight for diagnostics. There will be no need to go to several sources and gather the information.
- Provides the opportunity for remote diagnostics. The expert does not need to come out to the field for basic diagnostics. A site visit by an expert will be the exception and not the rule.
- Evaluation of a piece of equipment is based on its own history and not by comparison to other equipment.
- Easily monitor worsening conditions so one can defer repairs and allow time to plan an outage.

Prepared by Mr. Amim Shahbaz, Senior Engineer-Product

ENELEX COAL ANALYSER (GE 4000 SERIES)

This is a **coal analysing system**. It helps to analyse the ash content, calorific value and moisture percentage. This parameter helps the customer to identify the coal quality and the conveyor itself.

The detection system consists of two measurement frames for ash content measurement and moisture measurement installed on the belt conveyor. The frames can be installed directly on the belt or as a part of the coal sampler.

The ash content detection stage evaluates the coal non-combustible content according to differences of attenuation of two gamma beams of different energy passing through the coal. It contains two radiation sources in protecting container placed under the belt, radiation detector and intelligent mathematic unit. The measurement radiation beam is directed through the conveyor belt, while the presence of persons nearby the device is not limited in any way. The design of the detection stage is focused on maximum reliability and safety.

The moisture detection frame contains the transmission antenna under the belt, reception antenna above the belt and the evaluation unit. The unit determines the moisture based on the attenuation and phase shift of the microwaves. Depending on the type of coal, the antennas can be arranged in different position. The evaluation unit is interconnected with the control stage of the system.

The control stage provides user-friendly operational interface with displaying the data on the touchscreen panel. The control stage can be installed directly in operator workplace. Inside the control stage box, there are accessible terminals for connection of communication interfaces and other analog or digital inputs and outputs.

It is possible to connect several remote terminals to the control unit and so distribute the data to different places if needed. The terminals can handle several tasks according to the use of each operator workplace. Measured and diagnostic data are stored automatically for reverse evaluation.

With suitable calibration the system can be used for any type of coal, the only limitation is the maximum granularity. The range of usable layer height is achieved by interconnection of the measurement methods and also wide dynamic range of the microwave device.

ENELEX AUGUR SAMPLER

This type of samplers is used for the collecting sample of the coal from the truck and the train compartment to verify the coal quality.

Extraction of sample

The auger sampling device is mounted on the positioning device which moves the unit to the chosen position. The sample will be

taken in accordance with regulations from any place or depth of the dump truck bed. The auger will extract the material from the truck while performing primary division. The needed part of the sample is collected into the sample hopper and the rest is dropped back to the truck. After the hopper is full, the sampler returns back to the home position to discharge the sample into the chute of the processing line for further sample processing.

From the chute the sample is transported to the crusher to be sized down to 10mm. The processing of the crushed sample continues onto the analysis conveyor and then the sampling conveyor to be further divided by the secondary sampling mechanism. The divided portion of the sample is stored into the containers at the carousel, the remaining part is dumped outside the processing line house.

Sample Deposit

The sample containers are equipped by closing lids which are only opened in case of filling by the sample. The rotary carousel can handle up to 16 containers for sample storage so that the distinct final samples can be stored selectively according to different suppliers, freighters or other criteria. The sampler can be also equipped by automatic packing machine with indexing for long-term sample storage.

Sample Representativeness

For the best achievable sample representativeness, the place of sample extraction from the truck bed is chosen automatically on random basis. Based on the batch size information the system will determine the number of samples taken from the trucks in order to collect suitable amount of final sample for the laboratory analysis.

System Controls

The sampler is controlled from the operator cabin. The process of sample extraction and processing is

pre-programmed and fully automatic. Work of the operator is limited to start the automatic operation and supervision. Communication with the system is ensured by the rugged industrial-grade control panel where it is possible to monitor, change and setup all working parameters of the automatic system, e.g., the time of sample extraction, number of samples taken, statistics of samples taken for each supplier, status of individual devices etc. It is also possible to set the parameters of the sampling process and view the errors and alarm messages.

Prepared by Mr. Akash Anand, Manager Pre- sales SS

TAURUS ANNUAL TRAINING PROGRAM





BIRTHDAY WISHES THIS QUARTER

Nijin Paul	19 May	Gopal	17 Jun
Zohair Hazan	30 May	Shivaraj TS	20 Jun
Papai das	01 Jun	Varun Tyagi	21 Jun
Prajitha Kamal	09 Jun	Sanchit Srivastava	30 Jun
Md Amim Shahbaz	15 Jun		

FOOD FOR THOUGHT:

You and I could be from two different worlds and have radically different world-views, but if we're willing to make space for the unfamiliar (as long as it is not an affront to our principles), we let both worlds converge to build a unit. A space where diversity strengthens everything pulsing through it. That's an empowered universe, right?

LEARN & DEVELOPMENT

We at Taurus Powertronics, are glad to announce a new Learn & Development (L&D) department under the direct supervision of Mr B S Pandey (Consultant@Taurus Powertronics).

In a discussion through video conferencing on 09th March 2022, the necessity was felt for the organization to provide some sort of upskilling to all the employees, especially to the engineers on the field on the topics of testing of various equipment present in substations/switchyards as well as transmission lines.

The purpose of this L&D department would be to provide employees with the skills and knowledge that they need, to grow in their roles while helping to grow the company as well. This department would solely focus on the professional growth and skill development of employees, in which we would be focusing on training, filling learning gaps, evaluating employees, and creating learning solutions that will help employees to achieve their best work.

Since, its inception, the department has already published with two modules of training modules for our field engineers relating to the testing of power transformers and magnetic balance tests. The first module at length discusses about the type tests, routine tests, special tests and pre-commissioning tests that need to be performed at each and every power transformers. The second module discusses the objective and detailed testing procedures of magnetic balance tests with required illustrations to help engineers at field to understand the purpose of the tests better.

We hope this department will help our employees to be more up-to-date on industry information, have stronger skills, and are more confident in their abilities this is all because when you invest in your employees, and you're investing in your business too.

FROM EDITOR'S DESK



Dear Readers,

To all the readers out there, I welcome you all to our 8th edition of the Watts Up magazine. It's a digital initiative in the form of a quarterly magazine released by Taurus Powertronics Private Limited, to educate, inform and update on the latest and greatest innovations, inventions and research happening in the field of power.

This year, we got a golden opportunity to be a part of the Middle East Energy Expo, which is the dedicated forum addressing the future of energy happening under the patronage of the Ministry of Energy and Infrastructure, UAE, where we organized a live demonstration for all the industry stalwarts related to the power industry from around the world and received a high number of accolades from them all.

Apart from this, during the Annual Meeting 2022, Taurus announced multiple new products for serving the power industry, so stay tuned for all the details.

Last but not the least, it has always been our motto to serve this industry for a very long time and we as Taurians are proud enough that we were astoundingly resilient, committed, and present for all our partners, clients, and the community through thick and thin and will always remain resilient.

On that note, I would love to end this magazine with a nice quote but for the next time stay tuned for upcoming news and events at all our social media handles. Hope to meet you all on the next edition of the magazine.

"Failure is simply the opportunity to begin again, this time more intelligently"-Henry Ford

By **Zohair Hazan**, AD General Manager

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