



MD'S ADDRESS



Watts up Friends,

**Wish you a
HAPPY NEW YEAR**

2021 with the corona almost gone, seems to be a promising year.

We are hopeful of completing this financial year as one of the best till date excepting all our plans workout the same way.

Kudos to our team and our partners for having put there best in spite of Covid-19 and travel

restriction during the year and did a splendid job.

Our team is striving hard to do the expected as planned and achieve the glory of the best financial year.

Good Luck and All the very best to our team.

Best Wishes

Regards,

M N Ravinarayan
Managing Director

NEW ASSOCIATION WITH HVPD

Last month Taurus signed an MOU with HVPD UK – World's premier Partial Discharge monitoring service provider to sell HVPD products in India.

PD is an electrical discharge that occurs across a localised area of the insulation between two conducting electrodes. PD activity is an indication of 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.

The major advantage of On-line PD testing and monitoring over off-line, is that it is non-intrusive, causing no interruption to service, and is performed under normal operating conditions (voltage, frequency, load and environmental), therefore no overstressing due to overvoltage.

The product range from HVPD includes Monitoring, Diagnostic, Handheld and Sensors for locating, identifying and measuring the Partial Discharge in the system.

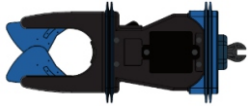






These can be used to detect Partial Discharge mainly in Transformers, Motors, cables, rotating machines and all the High Voltage equipment where insulation quality need to be checked.

For more information visit hvpd.co.uk

NEW PRODUCTS FROM TAURUS MULTI

Taurus Multi, known for measuring the smallest current possible has added few more innovative products into our basket.

These are manufactured keeping in mind the customer requirements, latest technology and to give the precise information to the customer from different segments such as Transmission, Distribution and Industry.

| Equipment | Picture | Description | Transmission | Distribution | Industry |
|---|---|---|--------------|--------------|----------|
| ALCL-80X: Surge Arrester Leaker |  | ALCL-80X is the special clamp meter to check the healthiness of the Metal Oxide Surge Arrester compliant with IEC6099-5 with built in Bluetooth for data transfer. Enabled the measurements for 100nA resolution and also 1st and 3rd harmonics leakage current directly with measurement Time, Temperature, Humidity and Location with Bluetooth Connection. | ✓ | ✓ | ✓ |
| FCM-400 Flexible AC/DC Leakage & Line Current Clamp Meter |  | FCM-400 Flexible AC/DC leakage and line current Tester Superior flexible CT type clamp meter for the measurement of AC/DC Leakage and Line current. It measure AC/DC Current from 1mA to 3000A with jaw size 200mm. Data Hold function also available. | ✓ | | |
| HCL-36X High Voltage Clamp Meter |  | AC Load Current Clamp Meter for high Voltage Circuit with built-in Bluetooth for Data transfer and can be mounted on Hotsticks. It is used for below mentioned application. <ol style="list-style-type: none"> 1. Check the overcurrent before live-working 2. Check the imbalance of three phase on the overhead line 3. Energization check under bypass working on the overhead lines 4. Can it be used as a check against stealing electricity? | | ✓ | ✓ |
| MET-10X Clamp Earth Tester |  | Clamp Earth Tester Next clamp-type grounding resistance tester and Surge impedance tester that can connect to a smartphone via Bluetooth and save data on an our cloud server by $\Phi 34$ mm or $\Phi 80$ mm diameter clamps. By connecting to a smartphone or tablet via Bluetooth, it is possible to operate and save data at a remote location (MAX around 10 m). 25 kHz fixed surge impedance measurement. | | ✓ | ✓ |
| M-1140 Leakage Clamp Tester |  | Next-generation leakage current clamp meter with connection, via Bluetooth, to a smartphone which displays waveforms and data. Waveform display is possible with connection to a smartphone. Measurement data is to be accumulated in the server, and it is available for graph and CSV output. By examining influences of harmonics or noises, it is possible to investigate diagnosis and cause of troubles at facilities. | ✓ | ✓ | |
| M-800D Big Jaw Leakage & Load Current Clamp Meter |  | True RMS Big jaw Clamp meter used for the measurement of load current and leakage current with high accuracy. Measured data can be stored on the server by linking with a smartphone or tablet with built-in Bluetooth, and it can be used as an "Early detection of facility failure" or "Indication of insulation degradation". | | ✓ | ✓ |
| HWT-301 Digital Harmonic Tester |  | Harmonics and leakage current Clamp-on Tester. It measures True rms reading for ACA and ACV & up to 25th harmonics current and voltage. Conform to IEC safety requirements. Current and Voltage Harmonic measurement at <ol style="list-style-type: none"> 1. Secondary side of CT & PT at Substation for Electrical noise measurement 2. Capacitor Bank at Distribution and Railway substation 3. Power Conditioner of Solar PV System 4. Industries where VFD & VSD based motors are used | | ✓ | ✓ |

NEW CONCEPT & METHODOLOGY ON TOWER LEAKAGE CURRENT MEASUREMENT & ULTRASOUND DETECTION FOR INSULATORS HEALTHINESS

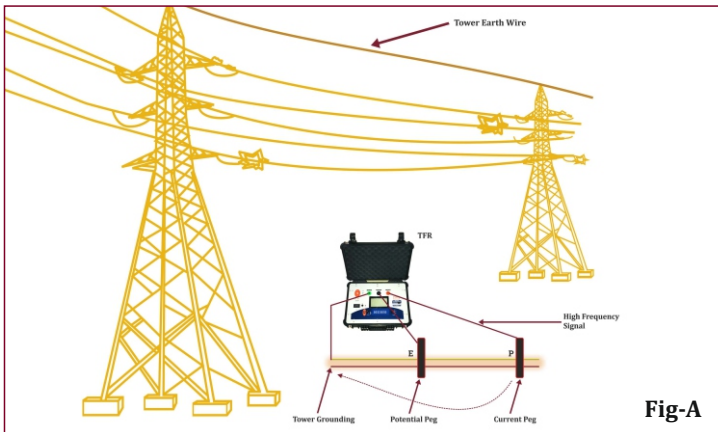
Abstract

Electrical insulation is an important part of all electrical systems. The Transmission Line Insulators under operation are subject to many stresses like electrical stress, mechanical damages, vibration, excessive heat or cold, dirt etc. which lead to the insulation failure of the Insulators & causes leakage current to flow & subsequently fail or trip the line. So to monitor the leakage current is an important parameter to be considered by Electrical Utilities & Transmission Companies. This paper highlights the concept and importance of Leakage Current measurement on Transmission Tower & Ultrasound Detection on Insulators to Identify the Leaky Insulators typically with Taurus LIDOR for predictive & preventive maintenance Also this paper emphasizes the necessity as a pre-check of Tower Earthing measurement with high frequency Resistance & Impedance Tester (Taurus: Preziohm TFR) before measurement of Tower Leakage current to confirm the good earthing at the Tower Leg, so that reliable Tower Leakage Current measurement can be achieved for right decision to identify the faulty insulators.

NEW CONCEPT & METHODOLOGY TO CHECK THE LEAKY INSULATOR

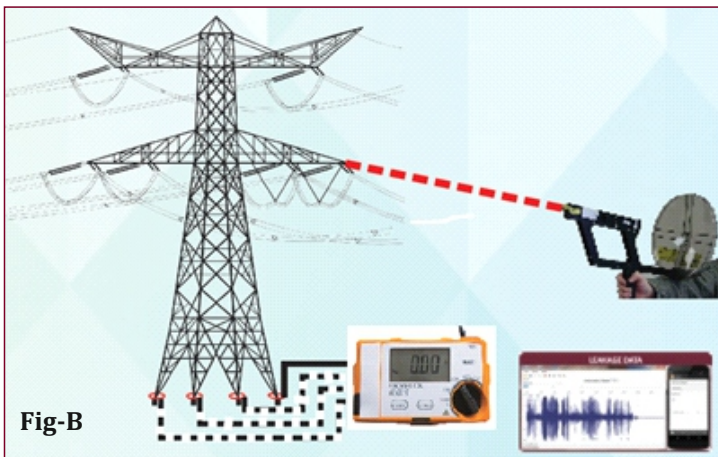
New concept has been found to check the Leaky Insulator by measuring the Tower Footing Ground test as pre check, followed by Tower Leakage Current measurement & conducting the Ultrasound Detection typically with (TAURUS-LIDOR-RZ) on Insulator Strings to Identify the Leaky Insulators. Basically Methodology has been categorized in three part as mentioned below.

Step-1: Measurement of Tower Footing Resistance, Impedance & Inductance as a pre-check for Tower Footing Ground



Step-2:

1. Measurement of Leakage Current at Tower Legs & Ultrasound Detection on Insulator Strings to Identify the Leaky Insulators – Shown in Fig B



Prepared by **Mr. Pankaj Kakoti**-Manager-Products & **Mr. Amim Shabaz**-Sr. Executive-Presales

For Full Paper, please click the below link:

https://tauruspowertronic-my.sharepoint.com/:b/g/person/bharath_tauruspowertronics_com/EekyHUISDLIjsGQOJh-vlq8BIqX2X5AtriVrdBi2UYatqQ?e=7HHPuK



Benefits of tower grounding check, leakage current measurement & ultrasound detection for insulators healthiness

The combined measurement methodology as mentioned above (LIDOR-RZ) is a combined solution for overhead Transmission Line tower for analysing the health of the insulators by analysing leakage current, ultra sound and tower footing earth analysis by high frequency IEEE-81.

Apart from the present Insulators degradation, the presented methodology will be very much helpful to predict the upcoming failure of insulators, which can be listed & action can be taken accordingly to prevent the upcoming catastrophic failure.

1. Analysing 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.
2. Tower footing Impedance measurement will help in assessing the health of the tower footing earthing for Power frequency as well for Transient/Lightning frequencies by Measuring all three parameters i.e Impedance, Resistance & Inductance.
3. Good value of Tower footing Resistance is safe discharging of power frequency leakage currents during normal operation. High value of Inductance (L) & Impedance (Z) is Bad for Lightning frequency / Transient frequencies/
4. Analysis of Tower Footing Inductance (L) will help in identifying the future probable flash overs during lightning/Transient switching's.
5. Ultrasound measurement methodology uses to pin point the particular string of the tower by taking leakage currents and Tower footing results.

Suggestions for improvement

It is important to maintain good health of the insulators, the followings need to be practiced

- a. The Tower Footing Resistance Inductance & Impedance are measured regularly and maintained within limits to ensure prevention of puncture of insulators by back-flash.
- b. No Ultrasound to be picked up on insulators to confirm it's good health
- c. No ultrasound to be found on the hardware.
- d. No leakage current above prescribed limits to be measured.

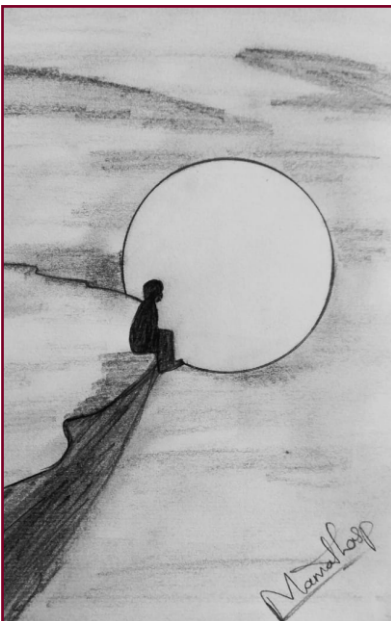
Conclusion:

Majority of the punctured insulator towers have high ground inductance, impedance and high current leakage to ground. High tower ground inductance and impedance is primary reason for insulator deterioration due to lightning and high frequency surges. All punctured insulator towers have high leakage current. This leakage current enters the same tower ground or nearby tower ground. The leakage current does not enter its tower ground if tower footing impedance is high. Then it finds a path to the nearby good tower footing ground. Hence, above prescribed methodology is a complete solution to identify the leaky Insulators & predict the upcoming degradation of Insulators.

Photo Gallery - Men at Work



Hidden Talent



By Mamatha

NEW YEAR CELEBRATION



BIRTHDAY WISHES THIS QUARTER

| | | | | | |
|--------------------|--------|------------------|--------|--------------------|--------|
| Anurag Soni | 09 Feb | Arun Maity | 25 Apr | Prajitha Kamal | 09 Jun |
| Sanjay R | 18 Feb | Ravindra B Yadav | 03 Apr | Papai das | 01 Jun |
| Alex Jerald | 22 Mar | Sanjeev Kumar | 24 Apr | Md Amim Shahbaz | 15 Jun |
| Biesh Kumar Roy | 05 Mar | MN Ravinarayan | 19 May | Shivaraj TS | 20 Jun |
| Swathi Mahesh | 15 Mar | Rama Murthy | 13 May | Varun Tyagi | 21 Jun |
| Vinaya NS | 21 Mar | Zohair Hazan | 30 May | Sanchit Srivastava | 30 Jun |
| Atish Kumar Biswal | 05 Apr | Vishwanath D | 03 May | Gopal P C | 17 Jun |



Our Product Videos at Youtube

To meet the growing demand from the customers we have started to post the Demonstration Videos of our product on youTube.

The much awaited video on Offline Fault Locator too was posted this month on youTube. The Step-by-Step instructions in these videos are definitely be helpful to the product users. The links are given below.

PDD-100



<https://youtu.be/cZvyCvCfBjg>

VOLTCHK



<https://youtu.be/hvcaydqPY5w>

DC Earth Fault Locator



<https://youtu.be/NSlhUskqSmM>

FCM-100



<https://youtu.be/ilmRSONQDvs>

Tower Footing Resistance (TFR)



<https://youtu.be/PDmAYUNbL0k>

MAX-3



<https://youtu.be/Rm7HkCDSH-8>

From Editor's Desk



Dear Taurus Team,

Hectic is the word that can be associated with the last quarter. Everyone in Taurus was on their toes. Travelling, meeting customers, Demos, STITAM execution, New Year calendar printing & distribution, Material dispatches and New Product Launches kept everyone busy throughout the quarter.

The "Feel Good" factor is in the air. Steadily and confidently the team is moving towards a Good Sales this year.

Thank you everyone for your contribution towards publishing this 3rd edition of WattsUp on time.

By Anil Deoraj Business Head - STITAM & Product Marketing

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