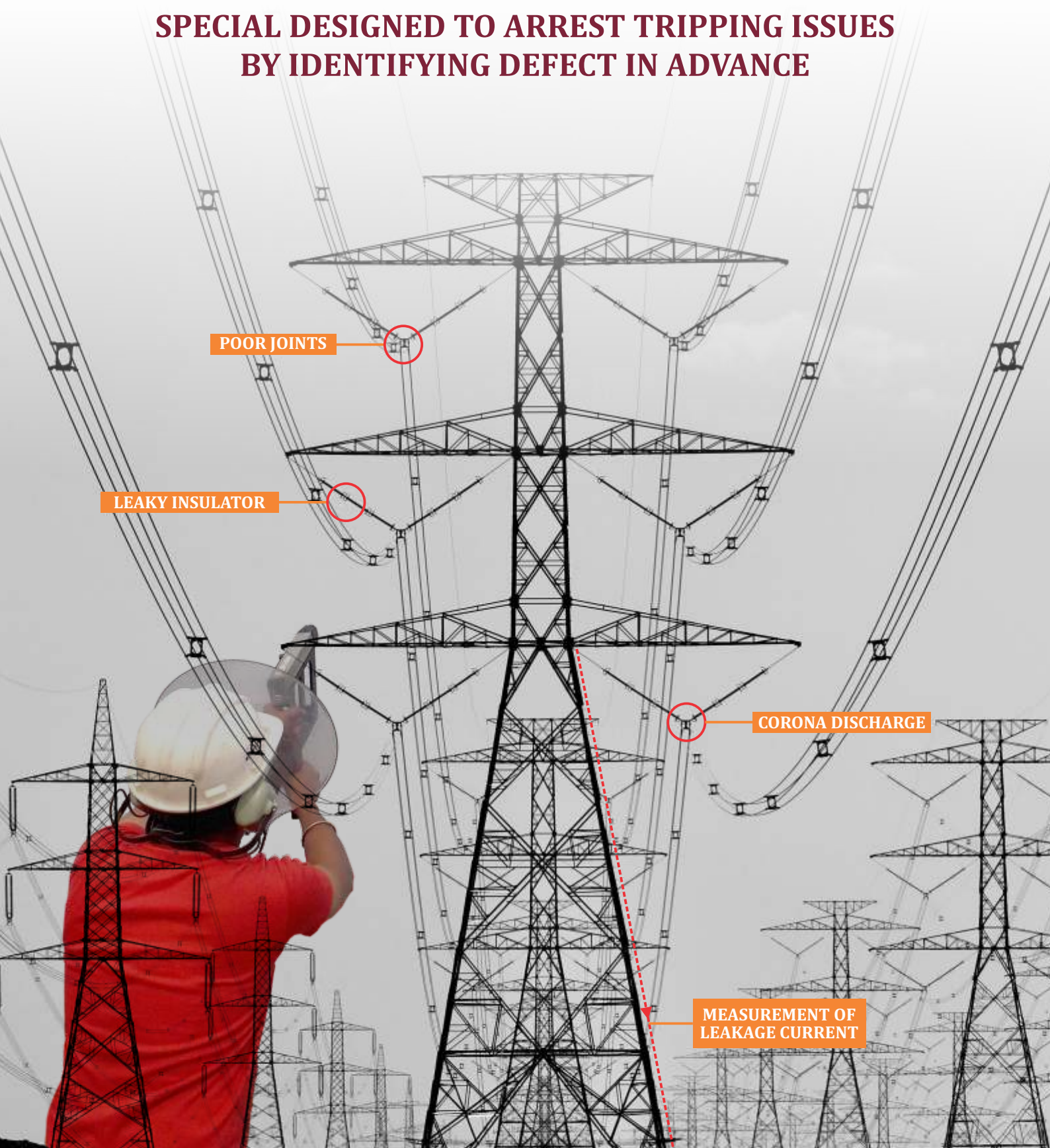


LID

LEAKY INSULATOR DETECTOR

**SPECIAL DESIGNED TO ARREST TRIPPING ISSUES
BY IDENTIFYING DEFECT IN ADVANCE**



TOWER INSULATOR HEALTH ANALYSER



The Leaky Insulator Detector (LID) is two piece hand held non-destructive inspection system which utilises AC/ DC Current sensor and Ultrasonic technology for predictive maintenance. The Leaky Insulator Detector (LID) has a Flexible clamp sensor and Ultrasound Receiver.

The Flexible AC/DC Clamp meter is specially designed sensor to measures the AC/DC leakage current in HVAC/ HVDC Towers leg (caused due to the leaky insulator).

Tolerance Level

HVAC Transmission Line Voltage Level	Abnormal Tower AC Leakage Current in mA
132 kV Single Circuit	150 mA
132 kV Double Circuit	180 mA
220 kV Single Circuit	200 mA
220 kV Double Circuit	250 mA
400 kV Single Circuit	350 mA
400 kV Double Circuit	400 mA
765 kV Single Circuit	800 mA
765 kV Double Circuit	1000 mA

Ultrasound Receiver is based on Ultrasound Technology which pick Partial Discharge Ultrasound from a distance upto 100 meters and converts Ultrasound into audible sound with digital graph and analog reading. After leakage current measurement, Ultrasound Receiver is used to scan the insulator strings of leaky tower and pinpoint the phase and position of the leaky insulator.

PROCEDURE

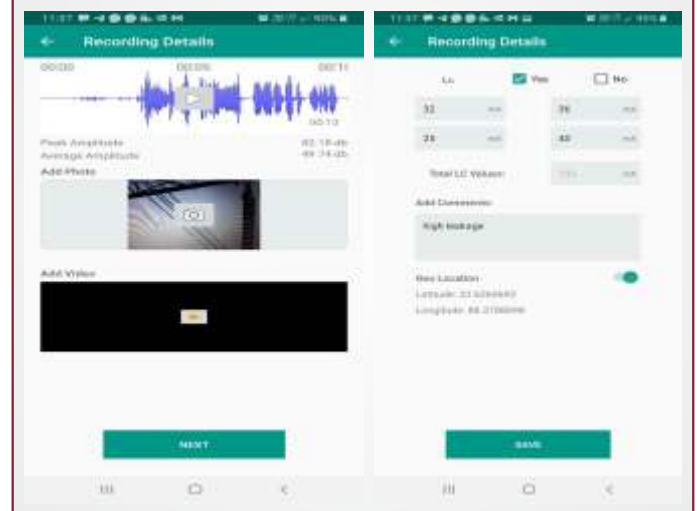
The Leakage current is measured in all four legs and summed to get the total Leakage Current. If the total Leakage Current is more than prescribed limit, the tower & insulator is declared to be leaky. Then the Ultrasound partial discharge detector is used to scan every insulator string and pinpoint the leaky insulator string by identifying the Partial Discharge arcing in the insulator causing the leak. The graphical evidence of arcing is then recorded for future reference.

Electrical Arching, Tracking, Partial Discharge & Current Leakage

Overhead insulators provides mechanical support to high voltage cables and electrically isolate them from ground structure. In Contaminated condition, uneven resistance exist .The surface of contaminated insulator leads to formation of conductive layer causes leakage current to flow.

As quoted from IEC 60270 PD does not cause immediate breakdown of the insulation, the appearance of PD indicates the presence of fault which cause energy dissipation and further leads to insulation degradation.

SOFTWARE



ADVANTAGES OF LEAKY INSULATOR DETECTOR TEST

Improved safety when testing with ultrasound: The LEAKY INSULATOR DETECTOR is designed to test Transmission/ Distribution towers, insulators and transformers for external arcing and corona type partial discharge and leakage current safely. The Leaky Insulator Detector (LID) can also be used to test critical equipment from a safe area. You can improve your safety practices as well as locate potential points quickly.

Find arcing, corona type partial discharge and leakage current: You can indicate and locate the ultrasound produced Leakage Current by arcing and corona discharge easily using the Leaky Insulator Detector (LID). In many cases, ultrasound is produced before heat. Therefore, you can implement an early cost effective routine monitoring program. Leakage Current is the most efficient technique to monitor and investigate the condition of insulator surface.

Performs better: The Leaky Insulator Detector (LID) have been tested on numerous occasions alongside competitive Technologies. The Leaky Insulator Detector (LID) detects with ultrasound technology and flexible clamp sensor with better accuracy than other devices.

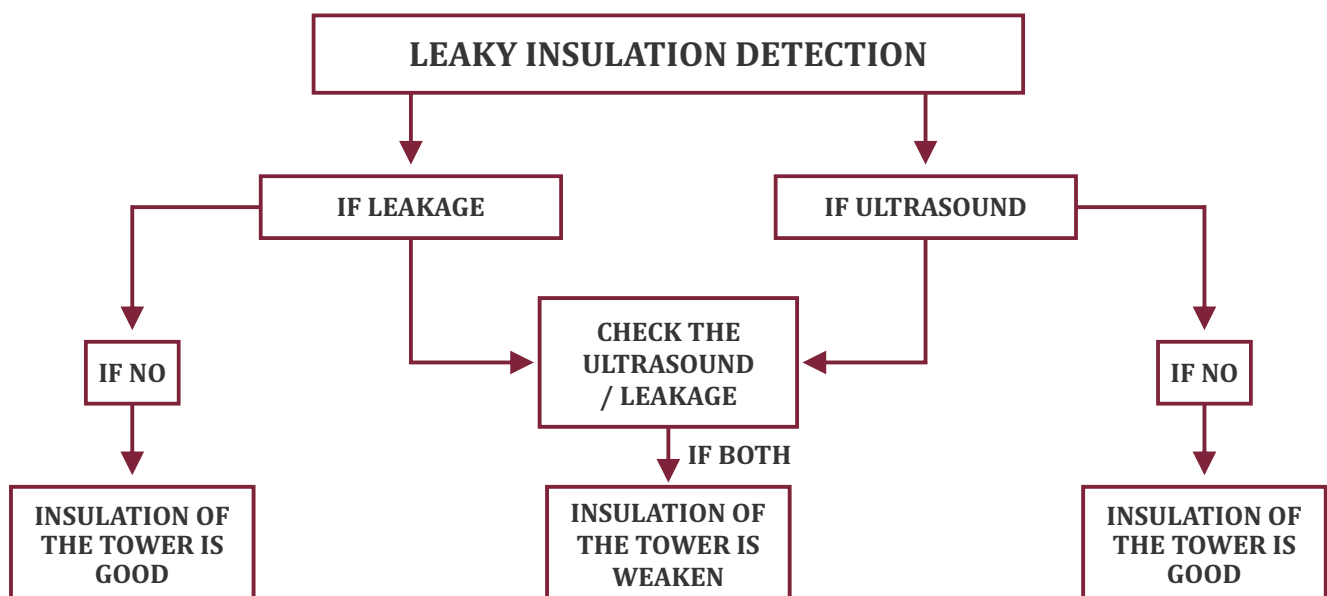
Improves power transmission testing: You can increase the amount of electricity that reaches your customers and decrease power grid failure by using the Leaky Insulator Detector to routinely monitor power transmission / distribution lines and transformers.

Reason to consider Leaky Insulator Detector (LID)

- **Detect ultrasound from 100 meters:** The Ultrasound Receiver improves the distance of detection to 100 meters.
- **The beam of reception** is decreased to 1 degree centre for better accuracy at the longer distances.
- **Pinpoints leaks at heights:** Many organizations have instituted routine leak detection programs for energy

savings. If you have installations that are more than 40 feet high, you could use the Ultrasound Receiver to locate the leaks within a few inches without climbing ladders or using lifts.

- **Best Signal Sensitivity Available:** As certified by NASA
- **Optional Instant:** Ultrasound Data capture and Analysis.
- **Leakage Current:** Measures both AC/DC leakage current
- Testing of Substation equipment, Distribution & Transmission lines
- Indication and location of arcing or Corona Discharge. Measures body leakage current and Geo magnetic DC current created due to unperiodic rotation of earth.
- Pinpoint faults at lightning Arrester, Bushings & Contaminated Insulator / Transformer.
- Indicate Broken Strands, Loose Hardware, Improper Installations, & Damaged / Punctured Insulator, Failure of Earthing.
- Other Applications in Power sector: Testing of Equipment in Generating Stations (with Optional Accessories)
- Indication of leaks in cooling towers & heaters
- Indication of leaks in Gas filled equipment
- Bearing condition indication in pumps, turbines, coal conveyors, coal feeders Steam valve testing.



SPECIFICATIONS OF LID

Functional Requirement	: Leaky Insulator Detector measures Tower Leakage Current & detection of Ultrasound Partial Discharge to identify the leaky insulators.
Memory	: Instrument should have internal memory storage up to 8GB
GPS location	: Should locate Lat-Long of a tower without using telecommunication sim card. Should be supplied along with Android Device/ tab.
Mobile software	: Instrument should be supplied with advanced Android application to store the data and GPS integration
Dimensions	: Dish Diameter 13" (330 mm)
Weight	: 1.3 kg (without Ultra sound receiver)
Housing	: Extruded Aluminum.
Battery Life	: > 45 Hours
Sensitivity	: Minimum Intensity 10-12 w/m ² , Minimum Ultrasonic Pressure 2.0x10 ⁻⁵ Pa@40 kHz.
Distance of Reception	: Up To 100 meters
Frequency Bandwidth	: 1.8 – 2.2 kHz @ level 0.7 (or -3 dB)
Working Resonance Frequency	: 40 kHz +/- 1.5 kHz.
Controls	: Laser Trigger On / Off Switch.
Data Transfer to PC	: Wi-Fi/Bluetooth
Reporting Software	: Available with Trend Analysis Chart
Type of CT sensor	: Flexible Split-Core Type
Inside Diameter	: ϕ 200 mm or ϕ 400mm (User Selectable)
Measuring Function	: AC/DC Leakage/Line Current
Measuring Method	: Dual Integration Mode
Measuring Range	: AC/DC 3A/30A/300A/3000A (AC50/60 Hz & DC)
Accuracy	: \pm 3% of reading
Display	: LCD max. 3200 reading with Annunciators
Low Battery Indication	: B" mark on LCD
Data Hold Function	: "DH" Switch
Zero Adjustment	: DC current range, by "0 SET" switch
Power Supply	: 1.5V (AA size, UM-3)×6
Calibration Certificate	: Calibration Certificate to be provided from any NABL accredited laboratory
Sub Model	: LID 450 (400 mm CT) LID (200 mm CT)



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