SCOPE

AR700

Defect Location in High-Voltage Equipment Insulation by Acoustic PD

A DIMRUS PRODUCT
MARKETED BY SCOPE

For effective defect location in HV assets like Transformer, Cables terminations, GIS and other HV equipments....
... AR700

The Product

AR700 – PD Defect Location in High-Voltage Equipment Insulation by Acoustic Sensors

To act on deteriorating insulation the source of PD must be known. The insulation defects produce partial discharges, which emits electrical impulses, radiation of electromagnetic waves as well as acoustic signals. The AR700 measures acoustic signals with multiple sensors spread over the transformer. Then the software determines the failure location using the time difference of all incoming signals. Finally, these coordinates are shown in a 3D model of the transformer.

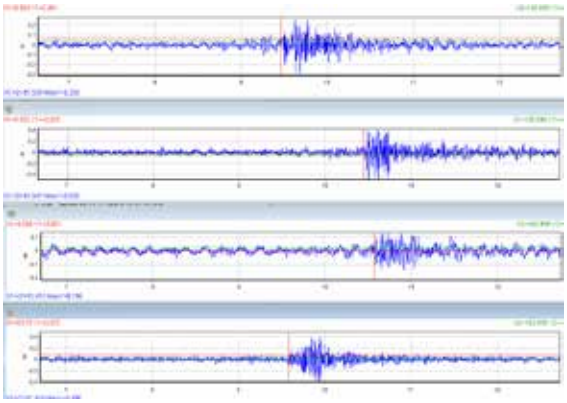
AR700 device is used for measuring of acoustic signals on the external surfaces of gas-insulated breakers and substations, power transformers and other tank high-voltage equipment. The acoustic signals are caused by partial discharges in the insulation, which is the sigh of the defects.

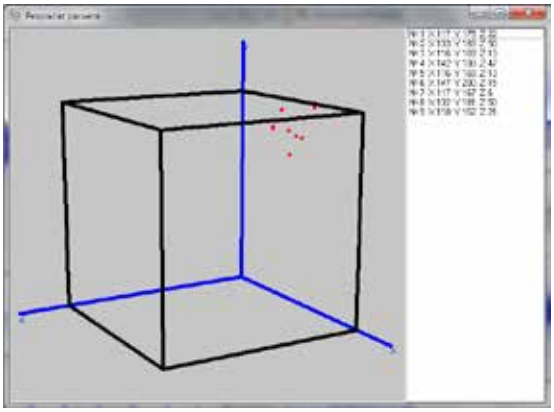
The advantage of "AR700" device is the quick installation of the acoustic PD sensors on the external surface of high-voltage equipment tank. The sensors have magnetic holder that is why there is no need to de-energize the equipment for the sensors installation.

"AR700" device has 4 synchronic channels for acoustic signal measurement. This gives the possibility not only to find the defects in the insulation, but also to locate them. The location function of the "AR700" device is unique for acoustic devices.

Measurement

To locate a defect inside the equipment, 4 acoustics sensors are installed on the tank surface in a definite order. The basic diagnostic factor is measuring the time of arrival of PD pulse to different sensors. For better noise immunity in "AR 700" device there is one supplementary channel for PD measurement, which operates in the high-frequency range. An HFCT sensor is connected to this channel. At the first stage of diagnostics, the zone of high acoustic activity is found on the surface of transformer tank. Then all the 4 acoustic sensors should be installed in the defect zone, and thus the defect location is carried out by using special firmware. The results are displayed in the screen of the device as a graph.





Features

- The signal analyses and the PD zone location could be carried out both in manual and automatic modes.
- Software calculates the fault location based on the time difference between the incoming signals. And report is generated about PD source location.
- Convenient and handy through light weight, small size and battery operation
- Can be used for multiple assets like Transformers, CTs, GIS, Cables etc.
- Defect type identification by synchronised measurement of PD

Specification

No.	Parameters	AR700
1	Acoustic channels for PD measuring	4
2	Frequency range of acoustic sensors	30 - 300 kHz
3	High-frequency channels for PD measuring	1
4	Frequency range of high-frequency sensors	0.1 - 20 MHz
5	LCD resolution	480x272pixel
6	PC connection	USB
7	Operating temperature range	-20 to +60 °C
8	Humidity	<98%, noncondensing.
9	Operating time from build-in accumulator	8 hours
10	Device weight, without sensors	1.1 kg
11	Dimensions of transportation case,	520x435x230mm
12	Device weight in carrying case	12kg

Benefits

- Location of PD pulse source directly on the site.
- Possibility to “listen” to PD signals and using signals for creation shapes of defects and expertise by “hearing”.
- Effectively plan the maintenance based on specific input about the defects and thus reduce the outage.
- Quick and easy to set up and transport from one location to another.
- Easy to understand 3D view of the fault position
- Helps enhance the performance of the assets by increasing uptime

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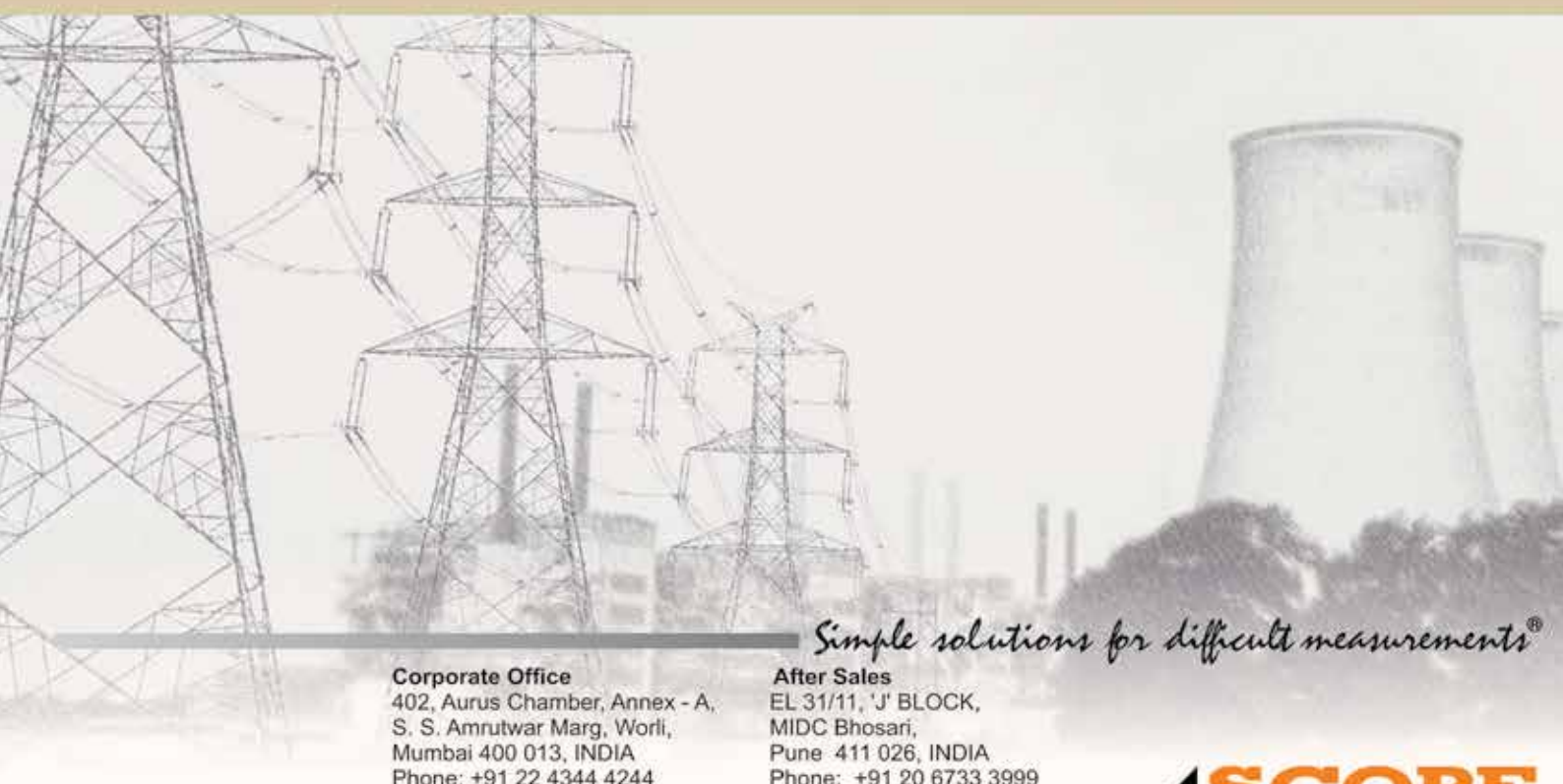
Distribution, Industry ...

... there is **SCOPE** *always !*



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Corporate Office
402, Aurus Chamber, Annex - A,
S. S. Amrutwar Marg, Worli,
Mumbai 400 013, INDIA
Phone: +91 22 4344 4244
FAX : +91 22 4344 4242
e-mail: marketing@scopetnm.com

After Sales
EL 31/11, 'J' BLOCK,
MIDC Bhosari,
Pune 411 026, INDIA
Phone: +91 20 6733 3999
FAX : +91 20 6733 3900
e-mail : works@scopetnm.com

Product Manufacturer : **DIMRUS**
Marketed : **SCOPE T&M Pvt. Ltd**

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