

# HV CABLE TESTING w/VLF



## VLF WITHSTAND - TAN DELTA - PARTIAL DISCHARGE

**Only the High Voltage, Inc. 0 – 200 kVac VLF-200CMF can provide the voltage and power needed to field test cables rated up to 220 kV. Withstand testing and diagnostics are now possible for HV cable.**

The three above testing methods are very well proven for MV cable testing and HVI offers many VLF models rated from 28 kV – 120 kV, with TD and PD accessories. With the HVI 200 kV VLF, cables rated up to 220 kV can now benefit from these technologies. HVI continues to lead in supplying the cable testing technologies needed.

**Withstand and Diagnostic field testing of high voltage cable is now practical** using the HVI 200 kV Very Low Frequency generator along with commercially available Tan Delta and Partial Discharge measuring devices. These tests are performed off-line, providing the most information possible. The use of multi-ton, expensive power frequency resonant equipment is no longer necessary. The 200 kV VLF from HVI is far smaller, lighter, easier to transport, and less expensive: everything needed to bring factory cable testing methods to the field is now available.

### VLF Withstand & Diagnostic Testing

The most basic use of the VLF is to perform a go/no-go withstand test to expose defects that cannot hold the test voltage. If an HV cable can't hold up to 2 times normal voltage, find out now. Let failure occur during downtime, make the repair, and not worry about that cable for many years. It is especially useful following installation, repair, and to insure critical cables are sound. IEEE 400.2 sets the kV/mm of test stress for cables rated up to 69 kV. Similar ratios of test voltage vs. insulation thickness are generally followed for 138 kV and 220 kV cable. Consult your cable manufacturer for their test specifications. A VLF withstand test is the simplest to use, most economical, easiest to interpret, guided by worldwide standards, and most certain way to test the integrity of a cable and its accessories.

For those wishing to perform diagnostic testing rather than withstand, tan delta and partial discharge methods are available. The VLF applies the voltage while the TD and PD diagnostic readings are taken. From this data collected, decisions can be made as to the health of the cable and what actions should be taken. These are diagnostic tests, not withstand/proof tests. The test voltage levels for these tests are generally lower than the withstand voltages with test times shorter in duration (~1.3  $U_0$ – 1.8  $U_0$  vs. > 2.0  $U_0$ ). The total test time may be 5 – 10 minutes rather than 30 – 60 minutes used for the withstand test.

**3 different tests - 3 sets of data - 3 ways to diagnose your cable**



**VLF-200CMF 0-200kV peak**  
75uF @ 0.1Hz - 3.75 uF @ .02 Hz



**VLF-120CMF 0-120kV peak**  
.55uF @ 0.1Hz – 5.5 uF @ .01 Hz



**VLF-90CMF 0-90kV peak**  
55uF @ 0.1Hz - 2.75 uF @ .02 Hz

## VLF-200CMF Mounting Options - Two Possible Configurations

Flatbed Design with PD & TD Accessories included & Trailer with VLF and 20 kW Generator

200 kV peak VLF Withstand, VLF TD & VLF PD Test Truck

Inducor Ingenieria S.A. Argentina

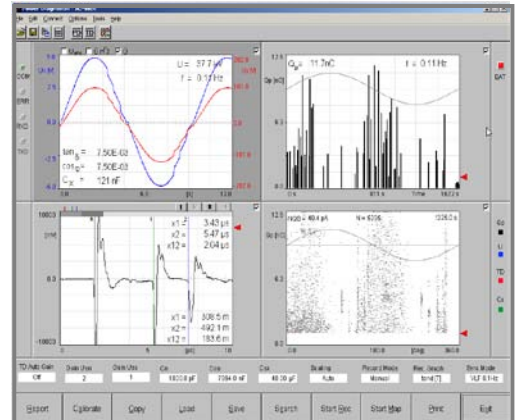


VLF Controls/regulator 200 kV VLF tank

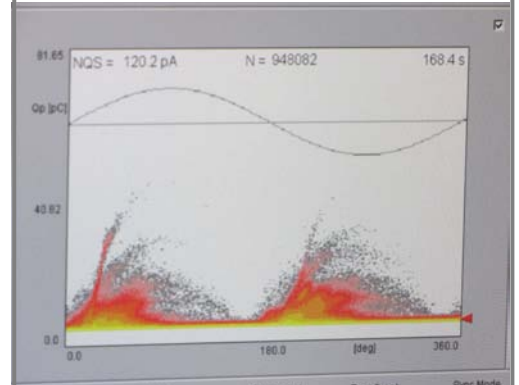
Measurement system with wireless output

Coupling capacitors

VLF noise suppression & interface filter



Sample PD/TD Screen Shots



HVI produced VLF-200CMF Trailer w/Generator



Trailer mounted VLF-200CMF. Includes retractable top to exit high voltage, separate room for controller, and 20 kW generator.



Medium Voltage PD/TD Models  
Used with lower voltage VLF testers



70 kV peak TD/PD system - PDIX  
40 kV model also available