



Application: HV Cable Testing with 200 kVac 0.1 Hz. VLF

Application Description

Pick one: 69 kV, 90 kV, 120 kV, 138 kV, 150 kV....etc. The need is to test a high voltage cable following its installation, or maybe it's repair. If it's new, we want to perform an overvoltage **AC Withstand** test. We might as well also perform a **Tan Delta** and **Partial Discharge** test to record baseline figures of merit. It's a long cable and needs many amps of AC current to charge it at 50/60 Hz. We will need a giant AC test set at a high cost, a difficult set-up, and a couple of hundred kVA needed to power the test. A series resonant would help but it is still massive, heavy, expensive, and logistically difficult. Obviously, DC voltage testing is not an option. What else?



Alternate Technology Solutions

There is another way. **VLF IT!** Very Low Frequency AC testing has been the mainstream method of testing cables in the field since ~2000 to perform tests similar to those performed in the factory, only at 0.10 Hz or lower in output frequency. Still alternating, sinusoidal polarity AC voltage and decades proven to predictably stress insulation to permit accurate withstand/proof testing results and diagnostic testing, most notably via Tan Delta and Partial Discharge measurements. VLF – drop the frequency to drop the AC charging current: 0.10 Hz. vs. 60 Hz. = a 600:1 difference in current consumption.

Many vendors around the world produce VLF technology and many produce the TD and PD measurement accessories designed for operation at 0.10 Hz. - 0.02 Hz. However, only two exist that produce VLF systems with a 200 kVac peak sinusoidal output voltage. One produces a solid state, electronic, computer driven design made in Europe since 2016 and the other produces a more conventional analog type controlled, oil immersed transformer system (like has been used for over 100 years), in New York, USA since 2002. Both share similar TD and PD diagnostic measurement accessories.

HVI Product Solution

VLF-200CMF, the world's first and longest operating 200 kVac VLF system available. Although not all electronic in its high voltage power supply design, nor in its operating control and programming methods, and offers limited data collection (usually recorded anyway by the connected TD and PD accessories), it is far and away the most favorable alternative. It's conventional oil immersed transformer design and analog, manual controls are extremely rugged, reliable, field serviceable, and economical. It comes equipped with a data logger to record the VLF output parameters for transfer to one's own computer. HVI and others have produced many truck, van, and trailer mounted packages, including with an on-board 20 kW generator for mobile power and all the diagnostic attachments. The VLF-200CMF is load rated up to 3.75 uF.

