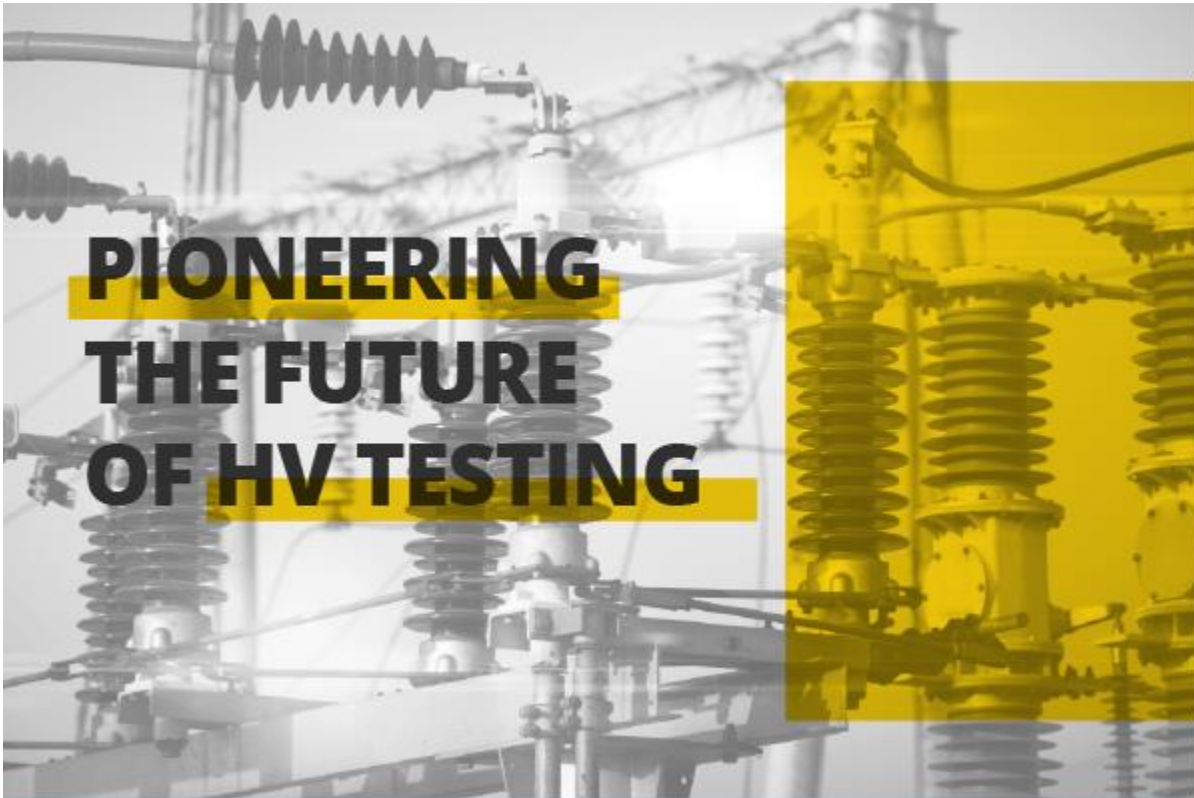




866-322-8653



### **Summer is Winding Down!**

**September 2024**

We're reaching the end of Summer here in Upstate New York. While the temperatures can still get up there some days, they're starting to become a bit more manageable, which is a welcome relief from the several heat waves we went through. The sun is starting to set a little bit earlier each night, the nights are definitely getting cooler, and before we know it Fall will be upon us!

This Summer, we spent a lot of time traveling to different trade shows and training sessions for some of our awesome customers. We still have some more

traveling to do before the year ends, including some trade shows at the end of August and late September. But we're excited about the prospects of another beautiful Fall in Upstate New York, which is arguably the best season of the year here.

What are you most excited about when Fall arrives? The kids going back to school? (American) Football? Fresh apple cider?

Drop us a line in on our inbox or a comment on one of our social media channels!



**Follow Us on Social Media**

Psssst! Be sure to follow us! We share content several times a month on our different channels, like photos from some of our recent trips across the globe, updates from happy HVI customers, and of course some of our more memorable milestones over the last 25+ years. If you don't already follow us, you can find us here on LinkedIn:

<https://www.linkedin.com/company/high-voltage-inc./>

You can find us here on Facebook:

<https://www.facebook.com/thevlfsource/>

We are always looking to expand our video-based content and we have a YouTube channel you can subscribe to, which can be found here:

<https://www.youtube.com/channel/UCM1VXmLOKCVWy71w6zS XKZw>

Lastly, be sure to check out our ever-expanding Knowledge Center, where you will find lots of helpful product and application information, including documents, PowerPoints, videos, and more! You can find it at:

<https://hvinc.com/knowledge-center/>

## **PRODUCT SPOTLIGHT**

### **PTS Series - Versatile DC Hipots for Apparatus Testing**



This Quarter's feature product line is the PTS Series of DC Hipots.

This is one of HVI's "Flagship" product lines, used all over the world for a wide range of high voltage testing applications, including shielded cables, motors, generators, aerial lifts and substation apparatus. These are combination DC hipots and megohmmeters, merging two instruments into one rugged and highly portable unit.

If you are in the market for an all around, general purpose DC Hipot, you should definitely consider a PTS Series unit. Our models range from 15kV to 600kV, so there is a suitably sized (and priced!) model for your specific needs. Check out the main PTS Series page on our website through the link below:

<https://hvinc.com/products/dc-hipots-megohmmeters/pts-series/>

If you need assistance in sizing or choosing an DC hipot, contact us at [sales@hvinc.com](mailto:sales@hvinc.com)

[DOWNLOAD PTS SERIES BROCHURE](#)



# IEEE 433-2022 VLF LEARNING CENTER

## 0.10 Hz. AC MOTOR/GEN. TESTING

### IEEE Std 433™- 2022 (Revision of IEEE Std 433-2009 & 433-1974)

**KNOW THE NEW STANDARD**

#### VLF = VERY LOW FREQUENCY 0.10 Hz. AC HIGH VOLTAGE

IEEE Recommended Practice for Insulation Testing of AC Electric Machinery with High Voltage Ratings up to 30 kV at Very Low Frequency.

Developed by the Electric Machinery Committee  
of the IEEE Power and Energy Society

Approved 9 February 2022 IEEE SA Standards Board

IEEE Recommended Practice for Insulation Testing of AC Electric Machinery with High Voltage Rating up to 30 kV at Very Low Frequency  
IEEE400.2-2013 Standard for MV Cable Testing, Including Tan Delta

### VLF 0.10 Hz. TESTING MOTORS & GENERATORS

IEEE Standard 433-2022 permits the use of VLF voltage for testing coils if the **peak test voltage is 63% higher (1.63x) than the 50/60 Hz. rms levels now in use.** This ensures equal test voltage stresses at the different frequencies.

**50/60 Hz. rms x 1.63 = 0.10 Hz. VLF peak Test Voltage**

$V_{rms} \times 1.414 = V_{peak} \times 1.15$  (extra VLF voltage) =  $1.63 \times V_{rms}$   
 $V_{rms} \times 1.63 = V_{peak}$  equivalent test voltage @  $\leq 0.10$  Hz.

#### Example for a 6000 V coil

50/60 Hz. test =  $2U_0 + 1 kV = 13 kVac$  for new coil;  $\sim 10 kVac$  for rewind.  
Using VLF:  $10 kVac rms \times 1.63 = 16.3 kVac$  peak test voltage @ 0.1 Hz.

Table A.1 (433-2022) High voltage withstand test for 1 min.

	50/60 Hz. rms	DC	0.10 Hz. (crest)
Test voltage	V	1.7 V	1.63 V
End turn stress	Little of end turn stressed	Most of end turn stressed	Intermediate between 60 Hz and DC
# of bursts of ionization (in voids)	7200	Few	12

Most VLF instruments display the peak voltage output, not rms

### VLF 0.10 Hz. TESTING IEEE STANDARDS

#### IEEE 433-2022

VLF 0.10 Hz. Testing  
For Rotating Machinery  
up to 30 kVac

#### IEEE 400.2-2013

VLF 0.10 Hz. Testing  
For MV Shielded Power  
Cable up to 69 kVac

#### OFF-LINE, OVER-VOLTAGE AC TESTING

- Off-Line Withstand/Proof Testing
- Tan Delta (TD)/Dissipation Factor Testing
- Partial Discharge Testing



Models from 30 kVac - 200 kVac with 0.5  $\mu F$  - 50  $\mu F$  load ratings

## Mike Peschel Spoke at EASA 2024 on VLF Testing

HVI was not only at EASA 2024 this year, but our very own Mike Peschel was also a Featured Speaker, presenting on VLF testing for AC Motors and Generator Testing!

Session attendees learned about:

- AC high voltage testing in general
- VLF AC testing specifically
- How to interpret and conform to IEEE 433-2022

Between our HVI booth and the seminar, EASA attendees had two places to learn what they needed to make testing windings easier and more efficient.

Were YOU able to attend the presentation? Drop us a line via email or on our social channels.



### **Tan Delta Bridge Video Now Live On YouTube and Website!**

Just a reminder that HVI has a YouTube channel! We have Sales videos for several of our most popular product lines, so if you're trying to decide on a hipot or other high-voltage testing equipment, you can learn more about our wide range of offerings.

Our most recent addition to the Channel was a Product Overview and Training Video for our Tan Delta Transducers, also known as Tan Delta Bridges. This product line is an add-on accessory for our flagship VLF E-Series of Very Low Frequency (VLF) AC Hipots.

Tan Delta testing is a well understood methodology for cable diagnostics and cable systems maintenance, with testing criteria set forth within the IEEE 400.2 standard. The video shows how to use HVI's TD-65E devices, as well as how to apply the IEEE standards to Tan Delta test results.

You can check out the Tan Delta Video here:



<https://youtu.be/T0qCrbTvh5U?si=XOEv8YS7k0TerNfA>

Also, be sure to visit and check back in the future for the rest of our video library at our main YouTube channel here:

<https://www.youtube.com/@highvoltageinc.922>



### **HVI On the Road: Midwest Summer Tour!**

HVI took our van on the road for some customer training this summer, visiting Illinois, Iowa and Nebraska while driving through some other

states as well.

Our own Dave Boyer traveled to an electrical substation for some training time with a local utility company. The substation was in the middle of huge swaths of corn fields and you couldn't even see it until you finally arrived! A Google Maps satellite view showed a small gray square among a sea of green. Here's a pic of the van en route to the substation. Dave thought that Shoeless Joe Jackson from the movie *Field of Dreams* might pop out from between the stalks!

HVI prides itself on our best-in-class training and customer support. If you have any high voltage testing needs, we're always just a click away at [sales@hvinc.com](mailto:sales@hvinc.com)





**HVI's (Still) Skipping Across  
the Globe in 2024**

And speaking of our travel schedule, we've already flown around the world so much in 2024, from Europe to the Middle East and back again to North America.

Which events later in 2024 will we see YOU at? Let us know so we can

connect! Take a look below for our upcoming travel schedule.

## **UPCOMING EVENTS**

**September/October  
28-1**

**NECA**  
San Diego, CA

[RSVP](#)

**November  
5-8**

**MATELEC 2024**  
Madrid, Spain

[RSVP](#)



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