

Electrical Power Systems Industry Resource on Technical and Professional Training

FALL 2020: VOL. 5. NO. 2

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A NETA World Journal Special Publication

A publication dedicated to disseminating information on technical and professional training for the advancement of the electrical power systems industry

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## **Testing Tactics Webinar Series**

Megger has partnered with NETA (International Electrical Testing Association) to present Testing Tactics, a special monthly webinar series that allows registrants to receive NETA CTDs (Continuing Technical Development Credits)\* for attending the live webinar.

The Megger Testing Tactics Webinar Series provides valuable educational electrical testing knowledge in areas including theory and applications, best practices, industry standards / procedures, and safety. These FREE webinars are presented by Megger's expert Applications Engineers and Product Managers, who utilize their experiences in the field and industry to give you greater insight into electrical testing so you can test with confidence.

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## Nov 20 Rotating Machines

Fundamentals of motor protection

### Dec 18 Protection

LV circuit breaker ground fault protection utilizing primary injection test method

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## THE RACE TO VIRTUAL TRAINING

BY RALPH PARRETT, AVO Training Institute

have worked in the electrical industry for nearly 15 years, and I never could have imagined being in the position we have all been thrown into. During my time in the electrical industry, I have worked in many capacities: maintenance and repair technician, project manager for critical system upgrades, technical instructor, curriculum developer, and now playing a key role in a private training company whose business foundation was based on face-to-face safety and hands-on training.

With the honor of a promotion in February, I had a big agenda of my own that I was excited to start on. Bringing our lab equipment up to par with industry standards, refreshing our curriculum, updating our delivery methods, creating classroom environments that are interactive from floor to ceiling — the list goes on and on. I did have plans to develop a learning delivery offering where the instructor would be remote from the learners and training would be provided through a virtual training platform. I had no idea that offering would have to be streamlined to also maintain a presence for our customers. The world's population has faced adversity in many different ways, and the current situation has done quite the number on how every person has had to make some form of adaptation

to how they conduct their daily lives both professionally and personally. This article focuses on what to expect while attending virtual training courses delivered online as well as the benefits and challenges of virtual learning.

## **TECHNOLOGY**

Virtual online training has grown rapidly to deliver learning opportunities to attendees from pre-K to university — and technical trades are no exception. Virtual online training permits the learner to have nearly the same experience they would in a physical classroom. Most of the information is delivered live by an instructor rather than in a prerecorded session. Attendees can ask questions to gain greater understanding of the topic or to clarify an area they may not feel they have fully grasped. To do this, virtual training platforms offer chat windows and the ability to turn on microphones and webcams that allow students to interact with the instructor and even other attendees. Sounds good right? The sales pitch is easy until you get into an environment you have never been exposed to.

## **INTERACTION**

We are accustomed to and generally thrive on face-to-face interaction inside a classroom, but while attending a virtual online class, the learner is commonly alone, and that can dampen the learning experience. How can we fix this? The instructor is responsible for driving interaction while delivering the content, and the learners are responsible for interacting. The instructor has various methods available to encourage interaction with learners, but it is truly up to the attendee to invest in the interaction.

Understanding that remote learning differs from in-person learning is the best first step; the second step is to dive in. The first time I taught a virtual online course, there were just over 20 attendees. I explained the importance of interaction for their and my own experience and told them that without their interaction, I wouldn't be able to identify adjustments that needed to be made to achieve learning. Because of their willingness, the objectives were accomplished, and we even had fun while covering the information. If you find yourself attending a virtual online session, I encourage you to open yourself up to this new

opportunity of learning. You may be surprised with the results.

## **SAFETY**

With everything, there are always benefits and challenges. One major, and obvious, benefit to virtual training is the reduction in health exposure for participants, their families, and their co-workers. One challenge in the virtual training environment is the loss of physical presence. Attendees and the instructor can feel isolated at times, and everyone plays a vital role in breaking through that by participating. Another major benefit for the customer is that the training is delivered remotely. This further reduces health exposure during travel to a training location and reduces the costs of travel to the training location. Even though the information is delivered remotely, it is still possible to receive industry-leading training to increase their knowledge and skills.

Safety is the most vital element in providing the environment the learner needs to be successful. When a learner feels safe, the foundation for learning has been accomplished. Training environments

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must think with safety in the forefront, and thanks to entities such as OSHA and NFPA, we have always had great guidelines on how to do so. The integrity of an attendee's health has always truly been a reflection on the safety of the learning environment. Prior to a global pandemic, there never was much thought about potential exposure to a virus. As a training professional, I can assure you that the health and safety of every individual participating in online learning has, and always will be, the number-one priority.



**RALPH PARRETT** is a United States Navy veteran with over 13 years of professional experience relating to electrical safety and maintenance training. During his time at AVO Training Institute, his proven dedication to training led to his position as Manager of Content & Delivery. His passion has always been to provide a topnotch training experience to ensure his students are more effective and safer when they return to the workplace. Ralph has extensive knowledge of maintenance, repair, and troubleshooting on control and instrumentation, relay logic systems, ABB control systems, central control station programs, power system equipment testing and maintenance, and other various types of equipment. He has developed and taught theory, operation, maintenance, and safety of various engineering systems.

# RESPONDING TO COVID-19 WITH ONLINE EDUCATION AND TRAINING

## BY DINESH CHHAJER and GREG VALDEZ, Megger

he global coronavirus outbreak and related social distancing, remote working, and employee health concerns have drastically altered the way business and training are conducted in a progressively changing landscape. The limitations put in place to prevent the spread of the virus directly affect the ability to adequately train employees in traditional face-to-face settings and call for implementing new digital tactics and educational procedures.

This article provides a picture of possible post-COVID training tools and content that enable technicians and engineers to continue their educational journey.

Our in-person Best Practices Seminars, the monthly Testing Tactics Webinar series, on-site customer training, the Technical Library on our website, and phone support from our technical support group worked well when travel and face-to-face meetings were the norm.

But as the coronavirus took hold, new ways of maintaining contact with our customers required converting from face-to-face to virtual meetings, increasing our digital content, and creating new ways to reach out online.

### **BEST PRACTICES SEMINARS**

Our Best Practices Seminar series has been offered for more than 10 years to share testing concepts, advanced testing techniques, industry standards, and experiences from application engineers. Traditionally, these day-long, in-person seminars were split into two sections:

- 1. Testing and maintenance discussions related to transformers, batteries, relays, cables, and low-, medium-, and high-voltage circuit breakers
- 2. Educational hands-on sessions using equipment related to the topic at hand

Still free to all, the 2-day seminars are now comprised of two 1-hour technical presentations and a 30-minute question and answer session each day. The hands-on session has been replaced with a 15-minute description of the test instrument relative to the applications and techniques being discussed. Attendees ask questions and get answers during the Q&A session.

These webinars are held every four weeks and cover topics including battery maintenance, transformer winding condition assessment, partial discharge for assessing insulation condition, power factor and dielectric frequency response for insulation assessment, and cable diagnostics and fault location. Previous Best Practice Seminars remain available to watch online.

## **TESTING TACTICS WEBINARS**

Testing Tactics Webinars provide valuable educational knowledge across several areas, including testing theory and applications, best practices, industry standards and procedures, and safety. These free webinars are presented by expert application engineers and product managers who use their field and industry experiences to provide insight into electrical testing, help users avoid common mistakes, and accelerate testing without sacrificing efficiency — and most important, safety. Held on the third Friday of every month, each 1-hour live webinar is followed by a 15to 30-minute Q&A session. For this series, we collaborated with NETA in North America to allow attendees to receive NETA Continuing Technical Development Credits (CTDs).

Over the years, we have used online webinars to share knowledge and industry experience with our customers. The monthly Testing Tactics webinars have proven to be extremely successful, so as the virus shut down our ability to visit customers onsite, the decision was made to focus on broadening the assortment of webinars. From that initiative, several new webinar series addressing testing tactics, special applications, and case studies — and even one called You Ask, We Answer — have been added to meet our users' educational needs.

## **Special Applications**

The Special Application webinar series was conceived to answer the need to continue product operation trainings amid the coronavirus restrictions. The focus shifted to instrument operation, step-by-step procedures, safety recommendations, and best field practices, as well as the basics of results analysis. The sessions show users how specific instrument features are direct answers to industry-standard requirements and recommendations and/or to typical situations a user will encounter in the field while testing. The 1-hour broadcasts are followed by a live Q&A. Recordings of previous Special Application webinars continue to be accessible online.

## You Ask, We Answer

The topical range of our webinars is expanding beyond traditional offerings with a series of webinars based around questions from users. These interactive webinars are all about customers and users and the questions and issues they run into in the field. Webinar attendees can ask questions in real time, and technical experts answer them live during the webinar. The webinar presentations are recorded, so attendees can refer back to the recordings as needed.

## Case Studies

The power industry thrives on learning from each other's experiences. Industry events and technical conferences are some of the best places to share field knowledge and real-world experiences, but most current and future conferences have been either cancelled or are going virtual.

The Case Studies webinars feature application engineers who share their field experiences and the test data that was collected. They walk through how the results were analyzed, outline the troubleshooting steps that were performed, and illustrate the process

of narrowing down the root cause of the problem. The series includes real-world examples collected from various sources, including consultations with utilities and service companies to help them troubleshoot asset problems and get back online safely and efficiently.

The Case Studies webinars cover topics on transformer testing such as winding resistance, turns ratio, power factor, and sweep frequency response analysis. Other assets such as circuit breakers and batteries are also covered.

Ultimately, our new solutions allow us to maintain contact with our customers, and that is the key component.

## **ONLINE MEDIA**

Online media has come to the forefront, as people found themselves unable to travel or work in the field. We knew we had to make more use of online media channels to add content that educated and enhanced our current customers' use of our equipment.

## **How-To YouTube Videos**

We understand the nature of electrical maintenance activities where a technician might have a good understanding of the technique but does not possess total recall of the operating details of an instrument. These instances generate situations where a quick response from an expert becomes a partner in the job. Gaining easy access to the answers to common issues that arise in the field is imperative. To facilitate this, we created a series of how-to videos related to the frequently asked questions our technical support group (TSG) receives on a daily basis.

The TSG is a team of application engineers and specialists who help electric utilities and testing service companies understand how instruments operate and how to analyze the results from a variety

of electrical tests. We compiled commonly asked questions to create a series of 3- to 8-minute videos that walk through test procedures and software demonstrations to refresh a technician on operating details or instrument features.

Posted on YouTube, these videos are organized on playlists or can be added to user playlists for quick access while testing as if they were interacting with an applications specialist. The videos cover relay, transformer, instrument transformer, cable, and battery products and can be used as small training capsules on top of being a quick way to find answers to common questions.

## **Remote Customer Training**

In-depth training has traditionally been conducted onsite with sessions conducted by applications engineers who cover the theoretical and practical aspects of the application in question. The need for in-depth training has not stopped, so we adapted to provide this type of training under the current circumstances. The use of platforms like Microsoft Teams has been instrumental, as it allows the same applications engineers to conduct remote sessions with customers, first by enabling remote, webinar-like presentations to cover theory, best practices, procedures, and testing recommendations, and then using audio- and video-enabled devices to conduct controlled-environment demonstrations and explanations using the instruments. The sessions are followed simultaneously on the customer side using their own instruments and test specimens or using demonstration boxes. This allows trainees to acquire knowledge of the application and the procedures, while still getting the experience required for field tests.

## **Technical Podcasts**

Technical Podcasts are 15- to 25-minute discussions related to electrical testing theories, ideas, and practices that provide insight and educational information in an easy-to-digest format. Technical experts including product managers and applications engineers engage in lively discussions that focus on a single subject, or they might answer a series of questions that have been collected from customer interactions.

## **Technical Library**

Our website's technical library is the repository for the numerous application notes, articles, papers, and technical pieces we produce on an ongoing basis.

## **Application Notes**

The library contains numerous documents related to products, testing, and education that include application notes. An application note addresses a technical topic and condenses the information into a relatively small number of easily digested pages. To date, more than 180 application notes have been released on topics ranging from explaining technology basics to performing a particular test on an apparatus to interpreting results.

Application notes save customers time researching complex technologies or scouring through a product user guide. While some application notes are longer, many are only 1-2 pages in length, making them convenient to provide to field personnel. Some customers print and laminate them for repetitive use.

## Transformer Life Management Bulletin

Even during a pandemic, power must be delivered to consumers with a high degree of reliability. Transformers are an important asset for power delivery, and the transformers in our aging fleet need special attention through preventive and predictive maintenance. The Transformer Life Management (TLM) Bulletin goes into the details of diagnostic test methods as recommended in various international standards. The TLM Bulletin is for customers who need an in-depth understanding of transformer testing techniques in order to review test results and get involved in troubleshooting practices. Important topics such as power factor, excitation current, core demagnetization, OLTC dynamic resistance, and moisture in insulation are covered. The TLM series is a great learning resource for transformer operators and asset owners to gain the insight required to make informed decisions to optimize the life of a transformer.

## VIRTUAL LEARNING PROGRAM

Our training arm was hit especially hard by the virus as training courses have always been held in person to provide individual attention to students. The inability to teach in that manner meant transitioning to online learning and assessment while maintaining the high level of education we have provided for more than 50 years. This necessity led to our Virtual Learning Program.

In March, we began providing safety and coderelated courses virtually via online platforms. Since then, virtual offerings have been expanded to include maintenance-based training for protective relays, breakers, and substations. This platform allows attendees to receive the training required to maintain their qualifications and keeps them up to date on new industry standards. Attendees can interact with each other and the instructor through text, video, and audio chats to provide a learning environment as close to in person as possible.

## Case Study

Georgia Power, which owns and operates over 12K miles of transmission and 75K miles of distribution lines, provides electric service to more than 2.5M customers in 155 Georgia counties. A key component to Georgia Power's implementation of over 100 of our relay tests was a train-the-trainer program for education on the software component. The idea was for our technical and product management staff to train approximately 20 Georgia Power trainers and test engineers.

The original plan to begin in-person training in February 2020 was delayed until March. Then the beginning of the coronavirus eliminated the possibility of any in-person training for the near future. Both parties agreed to a revised plan using video conferencing. The first online training session was conducted in April, and subsequent sessions have continued for nine consecutive weeks of progressive training that has proven our ability to transfer knowledge through the use of video conferencing.

One attendee, Kevin Pierce, a Georgia Power senior protection and control test engineer, stated, "Megger custom-tailored their on-line training for GPC such that they go at our speed to train us on all the features of the core RTMS templates. Since our group supports RTMS for all field personnel, we require this foundation in order to meet our goal of being able to create our own test plans. It is obvious that Megger is committing significant time and effort to ensure we learn what we need to know to be successful."

## CONCLUSION

As we navigated this "new normal" and implemented these new forms of contact, we found we still needed to maintain personal contact with our customers in addition to offering materials online or on media channels. Individual conversations and interactions between people can never be replaced by impersonal media, so many of our daily interactions with clients occur via video conferencing, which has proven to be extremely successful and productive.

Ultimately, our new solutions allow us to maintain contact with our customers, and that is the key component that opens the door for us to share our knowledge and experience in support of the electrical testing industry. As we travel down this unforeseen road, we will continue to research and implement new and exciting ways to maintain a strong training regimen and educational program for our users.





**DINESH CHHAJER** is the Manager of the Technical Support Group at Megger USA. His responsibilities include providing engineering consultation and recommendations in relation to testing of transformers, batteries, circuit breakers, and other substation assets. Dinesh has presented numerous white papers related to asset maintenance and testing at various conferences within power industry. Dinesh previously worked as an Application Engineer at Megger and a substation and design Engineer at Power Engineers Inc. He is an IEEE member and a licensed Professional Engineer in Texas. Dinesh received his MS in electrical engineering from the University of Texas at Arlington.

GREG VALDEZ has been the Marketing Manager, NAFTA at Megger USA for six years. He previously was the Marketing Specialist at the AVO Training Institute, a Megger Subsidiary. Greg has been in marketing/advertising for over 20 year. He has a BA in advertising from Southern Methodist University and an MBA with a concentration in marketing and product/ brand management from SMU Cox School of Business.

## TRAINING TECHNICIANS IN A PANDEMIC

BY JAMES R. WHITE, Shermco Industries

'm like most everyone at this point. I'd like to go to a beach, pop a beer, and relax in the sun. Instead, I'm stuck at home writing articles like this because of COVID-19. While most of us are sick of this whole thing, the fact of the matter is that social distancing and masks in public seem to be necessary to keep the numbers reasonable. That's why I just stay at home, cranking out articles and columns. I look bad in a mask, but wear one anyway.

The question now is how do we train our technicians when we have huge problems getting them to a class? Flying is an issue because, from what I've seen on TV, people are packed in because the airlines have to make a profit. Once your technicians get to the training site, will your vendor maintain social distancing by limiting class size, or do they put as many as they can into a class? A good question to ask the technicians you plan to send: Will you maintain social distancing including during breaks and lunch? We don't want them to be carriers when they return, and younger people generally are not as worried about COVID-19 as older workers. These issues make it difficult to get the needed training in a safe and timely manner.

NFPA 70E's 2021 edition has not been approved by the Standards Council yet, but I have no doubt it will be in June. All training has been moved to Section 110.6 in this new edition. A new Informational Note to Section 110.6(A)(4) includes provisions for interactive web-based and interactive electronic training. The key word in both of these types of training is "interactive." The Committee wants such training to allow for immediate responses to questions — not training where questions are written down and answered sometime later. OSHA demands immediate answers and stated the requirement in their Letter of Interpretation dated November 22, 1994, which was published in the Summer issue of this Training Talk supplement to NETA World on page 11.

Our company faces the same problems as everyone else. Our Training Institute will open soon to provide the hands-on training needed so badly by new technicians, but they will be required to comply with a number of rules to keep students safe from the COVID-19 danger. We have also published a detailed operations guideline to keep all our employees safe. That takes care of the in-person hands-on training, but what about refresher and other types of training?

We are addressing this problem on a number of levels. When hands-on training is required for new technicians, we use web-based interactive training plus an environmental health and safety (EHS) or other suitable trainer to start conversations that can provide immediate answers to questions. This has shown to be as effective — possibly even more effective — than having a stand-up instructor fly to each location to present a course. The down side is the need to develop a web-based training program that includes the level of information to make this methodology practical. We have an entire department that does nothing but develop this type of program, so it involves definite cost. I'm not certain how valuable this is for smaller companies, but it is one option.

Another option is a revised program I first witnessed at Dallas County Community College (DCCC) years ago. I was part of a team exploring different options within the DCCC system to expand and more effectively use technology to present training

programs without live instructors. At the time, an instructor conducted hands-on training on a satellite, and students followed along by having the same type of equipment to work on during the lab sessions as the instructor. At the time, it was considered too expensive to install satellite dishes at all their locations.

Today, with web-based programs such as Microsoft Teams and Zoom, expense is no longer an issue. The idea of having an instructor conduct handson training over an interactive program is very doable. Such training can be delivered at low cost and still meet 70E and OSHA requirements for immediate answers to questions. As an example, a class on safety apparel could feature an instructor with a set of arc-rated and rubber-insulated PPE being transmitted to as many attendees as required. Those attendees would have the same PPE in front of them. The instructor would demonstrate the process of inspecting the PPE and ask for questions or concerns. Using the software, students would be able to ask their questions, and the instructor could provide immediate responses to the questions.

Training can be delivered at low cost and still meet 70E and OSHA requirements for immediate answers to questions.

## CONCLUSION

Web-based interactive training is an inexpensive way to provide training to technicians who are not in the office, keeping them separated from each other in a time of virus control, and meeting all requirements to ensure the training is up to the required level. I'm certain this is not for everyone, and there is the issue of keeping the attendees focused on the training, but with a good instructor and proper preparation, it presents a practical way for even smaller NETAmember companies to present needed training to their employees.



JAMES (JIM) R. WHITE, Vice President of Training Services, has worked for Shermco Industries Inc. since 2001. He is a NFPA Certified Electrical Safety Compliance Professional and a NETA Level 4 Senior Technician. Jim is NETA's principal member on NFPA Technical Committee NFPA 70E®, Standard for Electrical Safety in the Workplace®, NETA's principal representative on National Electrical Code® Code-Making Panel (CMP) 13, and represents NETA on ASTM International Technical Committee F18, Electrical Protective Equipment for Workers. Jim is Shermco Industries' principal member on NFPA Technical Committee

for NFPA 70B, Recommended Practice for Electrical Equipment Maintenance and represents AWEA on the ANSI/ISEA Standard 203 Secondary Single-Use Flame Resistant Protective Clothing for Use Over Primary Flame Resistant Protective Clothing. An IEEE Senior Member, Jim received the IEEE/IAS/PCIC Electrical Safety Excellence Award in 2011 and NETA's Outstanding Achievement Award in 2013. Jim was Chairman of the IEEE Electrical Safety Workshop in 2008 and is currently Vice-Chair for the IEEE IAS/PCIC Safety Subcommittee.

## AVO Training Institute: The One Stop for Electrical Safety and Maintenance Training

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- National Electrical Code Changes 2020 2-Day
- Electrical Safety for Industrial Facilities 4-Day
- Electrical Safety for Utilities 4-Day

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- Arc Flash Online Safety Awareness Training
- Changes to the National Electrical Code

## **Hands-on Training Courses:**

## www.avotraining.com/handson

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- Transformer (Basic & Advanced)
- Motors (Motor Maintenance & Testing, Motor Controls & Starters)
- Microprocessor-Based Relay Testing (Generation, Feeder, Transformer)
- Battery Maintenance & Testing

## Electrical Maintenance, cont.

- Power Factor Testing
- Grounding & Bonding
- Power Quality & Harmonics
- Programmable Logic Controllers, Maintenance & Troubleshooting
- Protective Device (For Industry & For Utilities)
- Short Circuit Analysis
- Protective Relay Maintenance (Generation & Solid-State)
- Infrared Thermography 1 & 2
- Advanced Visual Testing Software
- Energized Overhead Contact System Line Safety

## **Electrical Safety**

- NFPA 70E 2018
- Electrical Safety for Industrial Facilities
- Electrical Safety for Utilities
- Electrical Safety for Inspectors
- Electrical Safety for Mining
- Electrical Safety for Overhead Contact Systems
- National Electrical Code 2020
- National Electrical Code Changes 2020
- OSHA Electrical Safety-Related Work Practices
- OHSA Generation, Transmission and Distribution
- Maritime Electrical Safety

## **Electrical Fundamentals**

- Basic Electrical Troubleshooting
- Basic Electricity
- Electronics for Electricians
- Electrical Print Reading ANSI
- Electronics Troubleshooting



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\*NETA continuing technical development (CTDs) units are required of NETA Certified Technicians. AVO Training Institute is accredited by the International Association for Continuing Education and Training (IACET) and is accredited to issue the IACET CEU.







"I came in with little exposure to industry practices and now feel very comfortable/competent with the standard procedures as well as recommended safety measures during maintenance."

- N. Mitchell, Electrical Diagnostic Testing of Power Transformers class participant

## **Excellence Through Education**

Many people refer to the OMICRON Academy in Houston as "An Engineer's Playground." This is because in addition to classrooms, we also have a state-of-the art indoor substation with a variety of apparatus to perform hands-on testing including transformers, circuit breakers, protective relays, indoor circuit, PD testing area and our recently installed distribution automation wall.

## **Training Topics**

- Protection Relays and Meters Testing
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- Power Transformer Testing & Diagnostics

- Partial Discharge Testing
- Protection Theory
- End-to-End Testing
- Reclosers and Distribution Automation

See our full list of courses at omicronenergy.com/na-training



## Megger's Testing Tactics Webinar Series 2020

earn valuable testing tips and tricks from Megger application engineers and product managers. In this webinar series, our experienced staff will show you how to make your testing more efficient by sharing their lessons learned in the field. You will find answers to frequently asked questions, learn how to avoid the most common mistakes, and accelerate your testing.

## **Upcoming Webinars**

- MV and HV Circuit Breaker Testing beyond Timing and Travel Measurements
   September 18, 2020 | Presenter: Volney Naranjo
- State-of-the-art Diagnostics Technologies for Proactive Cable Condition Assessment October 23, 2020 | Presenter: Robert Probst
- Fundamentals of Motor Protection
   November 20, 2020 | Presenter: David Beard
- LV Circuit Breaker Ground Fault Protection Utilizing Primary Injection Test Method December 18, 2020 | Presenter: Daniel Carreno

## **Previous Webinars**

- Best Field Practices for Testing Instrument Transformers: CTs, VTs, CVTs
   November 15, 2019 | Presenter: Daniel Carreno
- Tan Delta Testing on Medium Voltage Cables
  December 20, 2019 | Presenter: Javier Ruiz
- Fundamentals of Partial Discharge Measurements

January 24, 2020 | Presenter: Charles Nybeck

 DC Insulation Resistance Testing: Effective Use of Guard Terminal

February 21, 2020 | Presenter: Nick Rees

- Understanding Sweep Frequency Response Analysis and Best Field Practices
   March 20, 2020 | Presenter: Sanket Bolar
- MV and HV Cable Fault Location Utilizing ARM Method

April 17, 2020 | Presenter: Javier Ruiz

- An Insight Into End to End Testing Philosophy May 22, 2020 | Presenter: Sughosh Kuber
- Off-line Partial Discharge Testing of Rotating Machines

June 19, 2020 | Presenter: Charles Nybeck

- Feeder Protection in Power Distribution Systems July 17, 2020 | Presenter: Abel Gonzalez
- Narrow Band Dielectric Frequency Response Application on HV and EHV OIP Bushings August 21, 2020 | Presenter: Diego Robalino

## **How to Join Megger Webinar Series**

- Megger Webinars are held on the 3rd Friday of every month.
- Time: 10:00 AM Central Time
- Sessions are FREE
- Earn 1 NETA CTD and 1 PDH or 0.1 CEU
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## **Earn Credits**

Megger has partnered with NETA (International Electrical Testing Association) in North America to present the special monthly webinar series Testing Tactics that allows webinar registrants to receive NETA CTDs (Continuing Technical Development Credits) for attending the live webinar.

- Only attendees of the live **Testing Tactics** webinar sessions are eligible to receive 1 NETA CTD (Continuing Technical Development Credit) and 0.1 CEU (Continuing Education Units) or 1 PDH (Professional Development Hour) for each webinar attended.
- Live attendees of the webinar will also receive a PDF copy of the PowerPoint presentation.



## Webinar Registration: us.megger.com/webinars

Megger designs and manufactures portable electrical test equipment. Megger products help you install, improve efficiency, reduce cost, and extend the life of your or your customers' electrical assets or your own. For more information, visit us.megger.com



## Shermco Industries: Your Electrical Safety Experts



hermco is a leader in electrical power systems maintenance, repair, and testing, and for years, we have trained others in those skills. Offering onsite, classroom, and hands-on training, Shermco conducts a wide variety of courses covering Electrical Systems Maintenance, Electrical Safety, and Electrical Technical Skills. Some of the most influential leaders in electrical safety work at Shermco Industries, and now you have direct access to that experience and expertise! Shermco offers technical and electrical safety programs year-round and at multiple locations in the U.S. and Canada. **NETA CTDs and CEUs through IEEE are available for most courses where applicable. Train with the experts. Train with Shermco.** 

## Shermco University Distance Learning Courses

- Electrical Safety Refresher
- Electrical Safety for Qualified Electrical Workers
- Electrical Safety for Managers
- Electrical Safety for Non-Electrical Personnel
- Electrical Safety for Utilities
- National Electrical Code
- Company Custom Courses

## **How Does Distance Learning Work?**

Teleconference courses are taught face-to-face and allow live interaction between instructor and students even though they may be in different geographic locations. Synchronous tools such as text chat, audio chat, or video chat will provide students with real-time access to the instructor while the class is in session.

Class size limited to twenty (20) participants.

Call and reserve your seat today.





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