TECHNICAL

MONDAY, JULY 27, 2020

10:00 am - 10:30 am
Welcome to Virtual NTI Powered by Milwaukee
    Todd Stafford, Executive Director

10:35 am - 12:05 pm
V-126 - PLC Training Today and Beyond
V-116 - Incident Energy, the NEC, and Electrical Worker Safety
V-107 - Crane Certification for the Electrical Industry
V-144 - An Introduction to Significant Changes to the 2020 NEC

1:00 pm - 2:30 pm
V-124 - NFPA 70E, An Introduction to and Overview of the 2021 edition
V-103 - AV Connectivity - Application, Deployment & Best Practices
V-120 - Medium Voltage Cable Splicing Module Courses, and importance of National Cable Splicing Certification for IBEW members and NECA contractors

2:45 pm - 4:15 pm
V-127 - Prefab - Office Prep & Construction Site Focused for JATC Apprenticeship Instructors
V-109 - Electrical Detailing Using Bluebeam® Revu®
V-130 - Solar Training Update
TUESDAY, JULY 28, 2020

10:00 am - 11:30 am

V-119 - LMS Fundamentals

V-104 - Basic Motor Controls

V-132 - The Truth About Arc Flash Clothing - See Through the Spin

V-145 - An Overview of ETA's Grounding and Bonding Textbook for the 2020 NEC

1:00 pm - 2:30 pm

V-133 - Transformer Connections and Inside Simulator

V-113 - Field Leadership Essentials

V-118 - Introduction to FAA Drone Certification

2:45 pm - 4:15 pm

V-136 - Using the Electrical Theory Simulator to Teach AC Theory and DC Theory

V-102 - AutoCAD Electrical

V-139 - Wireless Lighting Controls and the Benefits to Electrical Contractors
WEDNESDAY, JULY 29, 2020

10:00 am - 11:30 am

V-129 - Rostering, Enrolling and Curriculum Coordination - Simplifying the TMS, CLCS and Bookstore

V-101 - Advanced Conduit Bending Tips and Review

V-123 - Motor Protection and Application

V-146 - The Safer Alternative to your Grandfather's Ladder

1:00 pm - 2:30 pm

V-117 - Instrumentation Desktop Trainer

V-112 - Exothermic Certification Training

V-137 - Video Production for Training Effectiveness

2:45 pm - 4:15 pm

V-135 - Transformer Simulator for the Outside

V-122 - Milwaukee Tool MX Fuel Training: Coring, Cutting and Breaking

V-111 - Essentials of Teaching Test Instruments
THURSDAY, JULY 30, 2020

10:00 am - 11:30 am
V-125 - Overview of Code Calculations for the 2020 NEC
V-100 - 600 Volt & Medium Voltage Cable Fundamentals
V-119 - LMS Fundamentals

1:00 pm - 2:30 pm
V-128 - Qualified Workers for Solar Installations
V-115 - IDEAL Networks Structured Cabling Testing Overview
V-121 - Milwaukee Health and Safety

2:45 pm - 4:15 pm
V-110 - electrical training ALLIANCE NEW Motor Control Simulator: What it is, what it does and how it works
V-105 - Conductor ampacity and protection - AC Unit Problem
V-136 - Using the Electrical Theory Simulator to Teach AC Theory and DC Theory
FRIDAY, JULY 31, 2020

10:00 am - 11:30 am

V-131 - The State of Construction Technology - How to Leverage Today's Construction Technologies

V-134 - Transformer Protection and Application

V-143 - Intercom Technology in the Today's Security Industry

1:00 pm - 2:30 pm

V-106 - Conduit Level II - Two Labs for Your Use

V-108 - Network Video Installation Essentials

2:45 pm - 4:15 pm

V-114 - Getting Started with The PLR trainer

V-138 - What We Have Here is a Failure to Terminate! (This is a pre-recorded TP Tuesday Presentation)

V-142 - Online Test Generator
V-100
600 Volt & Medium Voltage Cable Fundamentals  
Sy Shaheen, Southwire
Learning objective will be to gain an understanding of the construction and characteristics and application of both 600V and medium voltage cable. Learn how to understand cable markings, insulation properties, copper vs aluminum, and more. 
Topics covered: Differences in cable stranding configurations – Copper and Aluminum. The effect of electrical fields on cable. Understanding the function of cable semi-con. Insulation types – Thermo-set vs Thermo-plastic. The role of insulation types as well as insulation semi-con. MV tape shielding function. How does the cable look electrically – Capacitance and Inductance in circuit. Understanding termination on 5kV and above. Factory and field cable testing.

V-101
Advanced Conduit Bending Tips and Review  
Tim Kopp, Greenlee
Discuss the machines and methods used for bending larger diameter conduits. An emphasis on safety around electric and hydraulic benders as well as the challenges of bending various types of conduit will be covered. Examples for calculating segment bends and concentric bends as well as manufacturer special bending table methods will be discussed.

V-102
AutoCAD Electrical  
John Scharosch,  
NECA-IBEW Electrical Training Center,  
Portland, OR
Using AutoCAD Electrical in the classroom to enhance motor control and PLC training.

V-103
AV Connectivity - Application, Deployment & Best Practices  
Joseph Cornwall, Legrand
In this 90-minute presentation we will explore the latest in AV technology, structured wiring, infrastructure, and interface systems. This presentation will guide the participant through a complete room design and installation from distributed audio to mobile device interface. Whether it’s in a classroom, conference room, or waiting room, you’ll approach the project with a sense of confidence that your installation will work as expected this time and every time. Our exploration will start with an overview of digital signals and payloads. We will then break that down into short, medium, and long-length connections, networked AV, and audio/speaker system installations. Along the way we’ll learn about HDMI, HDBaseT, AV over IP, USB, and system power and control. This will be a comprehensive, and useful overview of AV design and installation concepts and best practices delivered by one of the most recognized and respected instructors in the industry today. The material we cover is important for a variety of residential installations and corporate suites, digital signage solutions, student huddle spaces, conference rooms, retail spaces and show rooms. AV is an important opportunity for your future, this is a great way to get started!

V-104
Basic Motor Controls  
Philip Carter, ABB
This session will give a basic introduction to electrical motors and a few of the ways to control them.
V-105
Conductor Ampacity and Protection - AC Unit Problem
Thomas Domitrovich, Eaton

This session will walk the attendees through solving the following problem to determine conductor ampacity, EGC size, and proper OCPD selection. One raceway is installed to supply three, 3-phase, rooftop AC units in Atlantic Beach, North Carolina. Unit 1 MCA is 41 and the MOP is 50. Unit 2 MCA is 18 and the MOP is 25. Unit 3 MCA is 59 and the MOP is 70. The raceway is IMC and 2 inches above rooftop. The design engineer requires an equipment grounding conductor in all raceways and copper, THHN/THWN conductors. What size equipment grounding conductor is required and what size conductors are required to each unit?

V-106
Conduit Level II - Two Labs for Your Use
Greg McMurphy, electrical training ALLIANCE

Participants will explore the use of two labs: stacked rolling offsets and pre-positioning of kicks for use in teaching Conduit Level II. These labs will help reinforce the concepts of the conduit course and will also provide practice on trigonometry skills that transfer to AC Theory and vectors.

V-107
Crane Certification for the Electrical Industry
Virgil Melton, electrical training ALLIANCE

Overview of LMS content, references, and additional resources for the Crane Certification for the Electrical Industry Course. Participants in this course will be taught instruction methods for the EICA Crane Operators Course.

V-108
Network Video Installation Essentials
Dave Johansen, Axis

See how Axis tools can improve the operational efficiency of your organization. From planning, to design, to install, to administration, to troubleshooting — the right tools and know-how make all the difference. Discover The Axis Camera Interface. Learn the specifics of setting up your Axis camera for success, and understand the features and technologies included in a modern Axis camera.

V-109
Electrical Detailing Using Bluebeam® Revu®
Jason McCarty, American Technical Publishers

Bluebeam® software has become a commonly used program within the construction industry to create and edit PDF documents. Whether marking up installation drawings to be shared with crew members, or applying notes to submittal packages for review, this platform provides a wide range of capabilities. As technology continues to transform how we plan our work and communicate with trade partners, vendors, and customers, it is vital that every tradesperson continually learn and adapt. This presentation will focus on a few Bluebeam® functions that apply specifically to electrical detailing. For those with access to Bluebeam®, there will be an opportunity to participate in real-time hands-on exercises. The presentation will focus on the following: - Overview of Bluebeam profiles Measurement tools and settings, Custom Toolset creation, and Using Layers to Organize Markups.
V-110  
**electrical training ALLIANCE NEW Motor Control Simulator: What it is, what it does and how to use it**  
_Terry Coleman, electrical training ALLIANCE_

The _electrical training ALLIANCE_ along with Square D and 3D Internet have assembled a Motor Control Simulator (MCS) that mimics real-world classroom lab applications. An Instructor can assign Motor Control Projects to students that they can build online from anywhere there is internet access, test their projects, save them to their computer, and email a copy of the completed project file(s) to the instructor for evaluation. The Instructor Version of the MCS has 25 prebuilt labs that can be used as assignments or demonstrations. This is a completely freeform tool to build projects around. The simulation will work (or not) just like projects built on your lab walls and Inductance in circuit. Understanding termination on 5kV and above. Factory and field cable testing.

V-111  
**Essentials of Teaching Test Instruments**  
_Glen Mazur, American Technical Publishers_

This video presentation will cover some of the essentials of the traditional hands-on Test Instruments course, focusing on giving instructors effective tools and tips for teaching test instruments and circuits. Topics include: using simple circuits in innovative ways to teach test instrument features, sharing tips about procuring useful lab equipment, providing ideas for various circuit set-ups for experimentation with different test instruments, and emphasizing how to incorporate basic electrical knowledge (such as Ohm’s law) throughout the curriculum. Like the hands-on course, this presentation is based on material in the Test Instruments textbook.

V-112  
**Exothermic Certification Training**  
_Andrew McElroy, Harger_

This training provides the attendee with an understanding of the exothermic welding process as a means of making a permanent electrical grounding connection. Topics covered include the tools required, connection process, quality inspection, safety, and troubleshooting. The attendee, upon successful completion of the class, which includes a 20-question test will receive a certification card. This certification will remain active for 36 months.

V-113  
**Field Leadership Essentials**  
_Jason McCarty, American Technical Publishers_

This 90-minute presentation will highlight key leadership skills required to become a successful foreman in the construction industry. You will be inspired to share critical success factors with apprentices so that they will want to become highly skilled Journeymen who are tapped for leadership positions. Through the use of real-world examples and leadership animations, the presenter will discuss a range of leadership topics, including but not limited to: The role field leaders play in the success of every project; The importance of planning installations and maintaining an organized job site; Strategies for solving common challenges a foreman often encounters; Strategies for providing crew support and maintaining good morale.

V-114  
**Getting Started with the PLR Trainer**  
_Paul Meyers, Electrical Training Institute of Indianapolis_

Review the PLR trainer and demonstrate its simplicity of use for entry level programmable controls.
V-115
IDEAL Networks Structured Cabling Testing Overview
Dan Barrera and Wendy Thomas, IDEAL Networks
Cable installation directly impacts network performance. There are a range of copper and fiber testers from basic wire-map/length/visual verification to TIA/ISO project certification that insure maximum infrastructure bandwidth. Once cabling is tested or for service/troubleshooting calls, network testers are used to check switch settings, PoE, device connectivity and more. Additionally, setting up IP Security Cameras is time consuming. Using a tester designed to shorten and document this process reduces labor and call backs. Understanding testing and reporting requirements is critical. This technical overview by IDEAL Networks will cover the broad range of tester functions available and include guidelines on how to choose the right tester for each cable installation.

V-116
Incident Energy, the NEC, and Electrical Worker Safety
Thomas Domitrovich, Eaton
This session will address electrical worker safety with regard to shock and arc flash hazards as they relate to NEC 2020 requirements. In addition best design practices will be discussed. The attendee will be able to identify key areas of the NEC that increase safety pertaining to shock and arc flash hazards. The attendee will understand the fundamentals around why and how these latest NEC requirements increase safety for the electrical worker. These basic principles will give the attendee a foundation of knowledge that can be used and applied in various locations of the power distribution system above and beyond bare minimum code requirements.

V-117
Instrumentation Desktop Trainer
Jason Lunardini, electrical training ALLIANCE
Introduction of a new, small format trainer to allow for hands-on training in a desktop fashion. Will review the trainer and features, and discuss its intended uses. Analog pressure, analog temperature, smart temperature, pressure switch and I/P.

V-118
Introduction to FAA Drone Certification
Carl Hansen, American Technical Publishers
This course will provide an overview of drone technology and the steps required for obtaining FAA Part 107 Remote Pilot Certification (drone license). Information and sample test questions presented in this abbreviated course will help attendees recognize key study topics in preparation to take FAA Remote Pilot Knowledge Test in compliance with the latest CFR 14, Part 107 sUAS requirements.

V-119
LMS Fundamentals
Greg Greiner, electrical training ALLIANCE
Navigating the Learning Management System (LMS), discovering the power of the Reports, and getting students Active with system resources.

V-120
Medium Voltage Cable Splicing Module Courses, and Importance of National Cable Splicing Certification for IBEW Members and NECA Contractors
Andrew Goulet, electrical training ALLIANCE
Overview of covered course material in each Medium Voltage Cable Splicing Module, and Information regarding what the National Cable Splicing Certification Board is, along with where the NCSCB certification is required.
V-121
Milwaukee Health and Safety
Raffi Elchemmas, Milwaukee Tool Corporation

During this presentation Milwaukee will discuss its Health and Safety Overview, with a focus on Head Protection, Lacerations and Punctures. We will discuss why head protection is important, what construction employers and their employees need to consider when selecting head protection, and safe practices for using head protection. We will discuss innovations in hard hats & helmets that are improving job site health and safety across the country. We will also discuss the data behind cuts, lacerations, and punctures on job sites, how to understand the difference between cut level and puncture ratings, and what innovation there has been in recent years to help improve hand safety in construction. We will also discuss Milwaukee innovations in hand protection and the expanded line of solutions to help eliminate cuts, lacerations, and punctures.

V-122
Milwaukee Tool MX Fuel Training: Coring, Cutting and Breaking
Joel Petersheim and Brittany Sellnow, Milwaukee Tool Corporation

With new technology all around the jobsite, and tools and applications changing, Milwaukee Tool is focused on driving education on some of the industry applications typically overlooked. This course by Milwaukee Tool will walk through the process of using light equipment on the job site. Milwaukee will discuss industry lean construction, safety trends, and walk through the Milwaukee Pillars of safety and Hierarchy of Controls. The presentation will focus on the safe use of coring drills, cut-off saws and chipping and breaking. In this training Milwaukee will discuss coring and applications (floor mount coring, wall mount coring, and handheld coring), cut-off saw applications (wet, dry, metal), chipping and breaking applications, as well as proper use to meeting silica standard regulations. There will be step by step training on proper application, proper set up, and proper use of these tools. This Milwaukee training will help walk through some of the most challenging applications in the industry and ensure that they are being completed safely.

V-123
Motor Protection and Application
Thomas Domitrovich, Eaton

This session will walk the attendees through motor protection and application as per NEC 2020. The attendees will understand some of the basics around motor applications including inrush currents, motor starting curves, overcurrent protective device selection and more. This session will review the various parts of the motor circuit and help the attendee understand how each of the important components play a role in providing complete protection.

V-124
NFPA 70E, An Introduction to and Overview of the 2021 edition
Palmer Hickman, electrical training ALLIANCE

This session will provide an opportunity to get a preview of the 2021 edition of NFPA 70E. This session will be presented by etA Director Palmer Hickman who represents the industry as a Principal member on the NFPA 70E Technical Committee and has been on that committee for 18 years.

You will need to create a username and password with NFPA in advance of this session to gain free access to the content we will be reviewing together to take full advantage of this interactive session.

To prepare for this session in advance:
First, go to (by typing the following into your web browser)
www.nfpa.org/login
Then, select “Create a Profile” and follow the instructions to set up your account and sign into your NFPA account.
Overview of Code Calculations for the 2020 NEC
Derrick Atkins, Minneapolis Electrical JATC

Code Calculations has been revised to the 2020 NEC. A high-level review of each chapter will be covered with respects to significant changes for the 2020 NEC. Topics to be covered will be changes affecting Ampacity with modification of Allowable Ampacity to ampacity and rearrangement of Article 310. Consideration of the significant changes to lighting load calculations and adjustments for residential services with respect to 310.12 will be presented. Lastly, the importance of electrical systems and how it impacts Code Calculations will be covered.

PLC Training Today and Beyond
Jason Lunardini, electrical training ALLIANCE

Introduce the concept for future training and discussion forum.

Prefab - Office Prep & Construction Site
Focused for JATC Apprenticeship Instructors
Lonnie Cumpton, Dir Construction Mfg for NECA

Jobsite prefabrication has been a time-saver for small units of electrical materials; sections of duct banks; electrical closet layouts; etc. Today, to continue to be awarded projects, the construction costs have to be reduced by combining the normal work installation with sections of electrical units built offsite (or onsite) in a controlled environment and delivered JIT (Just in Time) to the jobsite areas.

Qualified Workers for Solar Installations
Robert Hattier, IBEW Local 134

Discussion regarding the importance of properly qualified workers for effective solar installations.

Rostering, Enrolling and Curriculum Coordination - Simplifying the TMS, CLCS and Bookstore
Greg Greiner, electrical training ALLIANCE

This presentation includes utilizing the import tool to add students to the roster instead of one at a time and utilizing the Course Level and Credit Summary (CLCS) tool to make the task of curriculum organization, purchase and enrollment easier.

Solar Training Update
Robert Hattier, IBEW Local 134

Discussion on changes related to solar training and the ongoing update of the curriculum.

The State of Construction Technology - How to Leverage Today’s Construction Technologies
Josh Bone, Industry Innovation for NECA

The success of the IBEW and NECA relationship has always been the ability to stay on the cutting edge of construction by the best trained workforce and knowledgeable management teams. Today’s construction projects have increased in efficiency and productivity by applying BIM (Building Construction Modeling). BIM allows the project to be virtually designed and to coordinate the workspaces between on the various trades. It is not an enhanced 2D AutoCad® approach, but a construction model that allows for communications between contractors at the final design stages through the hand-off to the customer. Josh Bone, a highly recognized expert in BIM & best practices, will discuss how to leverage today’s construction technologies utilized by the workforce on the jobsite.
V-132
The Truth About Arc Flash Clothing- See Through the Spin
Scott Margolin, Tyndale
This presentation will focus on how to evaluate and compare arc flash fabrics, clothing and supply options. We will examine COVID-19 and how to disinfect, arc ratings, FR durability, comfort, layering, improper wear, domestic sourcing options, emerging trends and the future of AR clothing. This class will use HD and Super slo motion videos and real of actual arcs, and real world examples.

V-133
Transformer Connections and Inside Simulator
Jim Dewig, electrical training ALLIANCE
Overview of single-phase and 3-phase transformer connections, additive and subtractive transformer polarity, and using the Inside Transformer Simulator.

V-134
Transformer Protection and Application
Thomas Domitrovich, Eaton
This session will review transformers, their applications and proper protection considerations with a close eye on NEC 2020 requirements. This session will walk the attendees through fundamental principles important for proper transformer installations including calculating FLA, Primary and secondary conductor and overcurrent protective device selection. The attendee will get to review the time-current characteris curves of all components in the application to obtain an indepth understanding of protection provided.

V-135
Transformer Simulator for the Outside
Larry Stover, ALBAT
Overview of LMS content for the transformer simulator. Interactive training tool that simulates transformer hookups, transformer windings, and the way transformer connections are made in a setting both safe to student and equipment.

V-136
Using the Electrical Theory Simulator to Teach AC Theory and DC Theory
Greg McMurphy, electrical training ALLIANCE
Creating and active learning environment and utilizing the Electrical Theory Simulator to support competency with AC and DC Theory.

V-137
Video Production for Training Effectiveness
Tim Miller and James Cashman, ATP
After viewing, participants will be able to describe the processes of creating videos for training. The content leads viewers through pre-production (concept, script-writing and storyboards, approvals), production (equipment such as cameras, lights, microphones) and post-production (editing / approvals and file distribution).

V-138
What We Have Here is a Failure to Terminate!
Ned Johns, IDEAL
Electrical equipment manufacturers have specified torquing requirements for electrical connections long before the release of the 2017 NEC. So, why does the NEC now specify the need the use calibrated torque tools on electrical connections, as given in article 110.14 (D)? This session examines the need, procedures, variables and tools required to help you answer the question... “How tight is right”? (This is a pre-recorded TP Tuesday Presentation)
**V-139**
*Wireless Lighting Controls and the Benefits to Electrical Contractors*

*Micah Martin, Lutron Electronics*

Project uncertainties, shrinking job timelines and increasing code and customer requirements are just a few of the challenges facing electrical contractors today. In this virtual session we'll discuss how wireless lighting controls can help mitigate the risk associated with these challenges by covering the components of a wireless lighting control solution, going through a code driven design exercise and demonstrating simple system programming.

**V-142**
*Online Test Generator*

*Bill Ball, electrical training ALLIANCE*

The Online Test Generator (TG) was rolled out in 2019 allowing tests to be taken on laptops and Chromebooks. This session will discuss how to start using the TG with all the many functions. Also, to be discussed is how to use the online TG for remote testing (at home) when crisis prevent apprentices from meeting at the training center.

**V-143**
*Intercom Technology in the Today's Security Industry*

*Jon Simpson, Aiphone Corporation*

This course will take you through leading edge products that are changing the way intercom products are used as a security industry communication tool. This course will look at intercom uses in various markets, such as commercial, schools, campuses, manufacturing, and healthcare. During this course, you will learn about choosing the proper intercom for the installation, installation guidelines and practices, how to properly provide integration with other security systems and what the future of the industry may look like given today’s circumstances. This course will provide valuable resources for instructors and students alike and will allow the participant to learn more about what is happening in the intercom market today.

**V-144**
*An Introduction to Significant Changes to the 2020 NEC*

*Mike Johnston, NECA*

This session will introduce you to a number of the most significant changes that occurred between the 2017 and 2020 editions of the NEC that contractors and electrical workers need to be aware of.

**V-145**
*An Overview of ETA's Grounding and Bonding textbook for the 2020 NEC*

*Mike Johnston, NECA*

This session will provide an overview of the changes between ETA’s Grounding and Bonding textbook and the related NEC requirements that occurred between the 2017 and 2020 editions.

**V-146**
*The Safer Alternative to your Grandfather's Ladder*

*Kenyan Allen and Dave Francis, Little Giant Ladder Systems*

This interactive presentation will share case studies and examples of how new advances in fall protection and new designs in ladders are changing the industry to help you work faster, safer, and more efficient. Say good-bye to grandpa's ladder and hello to the newest and latest advancements in the ladder industry.