



# Training Catalogue

Questions?

Email [trainingservices@shermco.com](mailto:trainingservices@shermco.com)

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# Inside Shermco Training Services

As a NETA-certified test company, Shermco Industries has the expertise to show you how it's done the right way—the safe way. Our instructors include NETA-certified technicians, industry-leading engineers and other qualified personnel who are current in the field they are teaching. If quality of training is important to you and your work practices, go with professionals. We are here for your safety.

## Open Enrollment Classes

Training technicians and other employees are the key way to keep everyone safe and up-to-date on all technical industrial regulations and skills. Shermco is here to make sure that instructor-led and hands-on training given is not only relevant but also covers each technical aspect spanning the industry. For your convenience, we schedule classes at our training facility in Irving, Texas.

## On-Site Training

Shermco has fully developed training programs that we can bring to you. Most courses are available at your job site as well as in open-enrollment classes. Many classes can be customized to customer-specific equipment and devices. Our onsite training programs provide the most effective hands-on training experience at very cost-efficient rates. The Benefits of On-Site Training:

- ▶ We train around your schedule.
- ▶ Modified classes to address your specific needs.
- ▶ Address your company's systems and equipment.
- ▶ Personnel available on site for emergencies.
- ▶ Consistency in your personnel training.

## Computer-Based Courses

Do you have technicians who require basic skills training or refresher training? We have something that may be of interest. We provide web-based training. These are not intended to be full-fledged training courses, nor will they take the place of our hands-on courses. What these web-based programs will do is provide that “tune-up” needed once your technicians and engineers have had hands-on training, but maybe have not had the opportunity to perform it often enough to be proficient.

# Courses

**Safety**



# Electrical Safety in the Workplace (ESiW)

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	2 Days (optional 3 <sup>rd</sup> day lab)
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	No formal prerequisite. Recommended that students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** This course provides participants with the knowledge and skills necessary to recognize, evaluate, and control electrical hazards in the workplace. It covers common electrical hazards, regulatory requirements, and safe work practices to reduce the risk from electrical shock, burns, and arc-fault incidents. Through interactive discussions, real-world case studies, and practical exercises learners will gain a clear understanding of how to work safely around electrical systems and equipment.

## CODES & STANDARDS REFERENCED:

OSHA 29 CFR Part 1910, Subpart S – Electrical

NFPA 70E® – Standard for Electrical Safety in the Workplace

CSA Z462 – Workplace Electrical Safety

## AUDIENCE:

Qualified or soon-to-be-qualified electrical workers, technicians, and supervisors.

## COURSE LEARNING OBJECTIVES:

- ▶ Review Electrical Safety Terminology, Rules & Regulations
- ▶ Discuss Electrical Hazards (Shock, Arc-Flash, Arc-Blast)
- ▶ Explain Personnel Protective Equipment (PPE)
- ▶ List Protective Boundaries from Safety Tables
- ▶ Identify and Review Components of Arc-Flash Warning Labels
- ▶ Discuss Lockout / Tagout Practices and Procedures
- ▶ Explain Multimeter Safety Considerations

## CONTACT US TO BOOK YOUR NEXT SESSION!

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(Pricing subject to change based on customization, first-come, first-serve basis, minimum charges apply)

## COMMON TAGS:

ESQEW, QEW, Arc-Flash Safety, Shock Safety, NFPA70E, CSAZ462, Qualified Worker Training, Authorized Person Training

# Electrical Safety in the Workplace Renewable Energy

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	2 Days
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	No formal prerequisite. Recommended that students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Provides essential knowledge and practical skills to recognize, evaluate, and mitigate electrical hazards associated with renewable energy systems. As solar, wind, battery storage, and other clean technologies become more common across commercial and industrial environments, employees must understand how traditional electrical safety principles apply—and how they differ—within modern renewable energy infrastructure.

## **CODES & STANDARDS REFERENCED:**

OSHA 29 CFR Part 1910, Subpart S – Electrical  
NFPA 70E® – Standard for Electrical Safety in the Workplace  
CSA Z462 – Workplace Electrical Safety  
NEC – National Electrical Code/ CEC –Canadian Electrical Code

## **AUDIENCE:**

Technicians and field engineers working on PV, Wind, or BESS assets.

## **COURSE LEARNING OBJECTIVES:**

- ▶ Identify common electrical hazards of systems:
  - » Solar PV
  - » Wind
  - » Battery Storage
- ▶ Apply code and standards requirements to work environments.
- ▶ Distinguish between AC and DC hazards, especially in PV and storage applications.
- ▶ Interpret electrical safety labels, boundaries, and PPE categories.
- ▶ Conduct risk assessments and implement safe work practices.
- ▶ Demonstrate proper lockout/tagout procedures for equipment.
- ▶ Respond appropriately to electrical emergencies and incidents involving renewable systems.

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## **COMMON TAGS:**

ESQEW, QEW, Arc-Flash Safety, Shock Safety, NFPA70E, CSAZ462, Qualified Worker Training, Authorized Person Training

# Electrical Safety Awareness

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	No formal prerequisite. Recommended that students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Intro to electrical energy, common hazards (shock, arc-flash, arc-blast), hazard recognition, boundaries, signage, and escalation.

## **CODES & STANDARDS REFERENCED:**

OSHA 29 CFR Part 1910, Subpart S – Electrical

NFPA 70E® – Standard for Electrical Safety in the Workplace

CSA Z462 – Workplace Electrical Safety

## **AUDIENCE:**

Non-electrical and incidental workers who have responsibilities to work near, but not on, electrical equipment as part of their regular duties. (operators, facilities, contractors).

## **COURSE LEARNING OBJECTIVES:**

- ▶ Recognize indicators of shock, arc-flash, and arc-blast and when to stop work and notify.
- ▶ Explain basic approach boundaries and why only qualified persons cross them.
- ▶ Describe required PPE at the awareness level and when to seek qualified support.
- ▶ Apply rules-based logic to determine “Normal Operating Condition” and ability to interact with equipment.

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## **COMMON TAGS:**

Arc-Flash, Electric Shock, Non-Electrical Worker, ESQEW, QEW, NEW, ESNEW, ESNEQW, NFPA70E, CSAZ462

# Electrical Safety: Emergency Response

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	No formal prerequisite. Recommended that students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Prepares responders for electrical shock and arc-flash / arc-blast incidents, site control, notifications, and post-incident processes including documentation and lessons learned.

## **CODES & STANDARDS REFERENCED:**

OSHA 29 CFR Part 1910, Subpart S – Electrical  
NFPA 70E® – Standard for Electrical Safety in the Workplace  
CSA Z462 – Workplace Electrical Safety

## **AUDIENCE:**

EHS personnel, supervisors, and qualified workers designated for electrical incident response.

## **COURSE LEARNING OBJECTIVES:**

- ▶ Establish safe approach and command roles during electrical emergencies.
- ▶ Provide initial care while controlling secondary hazards until responders arrive.
- ▶ Secure the scene, preserve evidence, and complete reporting requirements.
- ▶ Capture lessons learned and communicate them for future preventative efforts / corrective actions.
- ▶ Plan and conduct response drills to maintain readiness.

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## **COMMON TAGS:**

Arc-Flash, Electrical Shock, ESQEW, NFPA70E, CSAZ462, Qualified Worker Training, Emergency Response, First Aid

# Electrical Safety: Supervisor Responsibilities

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	No formal prerequisite. Recommended that students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Defines supervisory duties for qualification, permitting, field verifications, and coaching. Aligns leader responsibilities with Shermco safety processes and culture expectations.

## CODES & STANDARDS REFERENCED:

OSHA 29 CFR Part 1910, Subpart S – Electrical  
NFPA 70E® – Standard for Electrical Safety in the Workplace  
CSA Z462 – Workplace Electrical Safety

## AUDIENCE:

Front-line leaders, site supervisors, and project managers overseeing electrical work or personnel.

## COURSE LEARNING OBJECTIVES:

- ▶ Explain supervisory responsibilities under published codes and standards.
- ▶ Determine qualified vs. unqualified worker roles and verify training, through demonstration, proficiency, and documentation.
- ▶ Perform job safety planning and document task-based risk assessments (shock and arc-flash) and controls.
- ▶ Review Energized Electrical Work Permit (EEWP) decision process.
- ▶ List steps to establishing an electrically safe work condition and lockout/tagout (LOTO) practices and audit LOTO performance.
- ▶ Interpret labels, boundaries, and incident-energy information to verify correct PPE category/arc-rated PPE selection and approach boundaries.
- ▶ Practice contractor oversight, site-specific orientations, and interface with hosts to control energy sources and coordinate work.
- ▶ Conduct field observations, program audits, toolbox safety talks, and near-incident reporting analysis.

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## COMMON TAGS:

Arc-Flash, Shock Safety, Supervisor training, ESQEW, ESM, NFPA70E, CSAZ462, Qualified Worker Training

# Courses

**Maintenance**



# Electrical Equipment Maintenance: Renewable Energy

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Recommended students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Build practical skills for inspecting, testing, troubleshooting, and repairing electrical equipment used in renewable-specific environments (inverters, turbines, arrays, and BOP). The course addresses environmental stresses and power-electronics behavior, reliability-centered maintenance, and condition-based maintenance to reduce downtime and extend equipment life.

## CODES & STANDARDS REFERENCED:

NFPA 70B® – Standard for Electrical Equipment Maintenance

CSA Z463 – Maintenance of Electrical Systems

ANSI/NETA MTS – Standard for Maintenance Testing Specifications

for electrical power equipment & systems

Various IEEE & OEM procedures are also referenced

## AUDIENCE:

Technicians maintaining PV, wind, and BESS equipment; planners coordinating renewable O&M in accordance with an Electrical Maintenance Program (EMP).

## COURSE LEARNING OBJECTIVES:

- ▶ Align inspections/tests with standards and OEM guidance.
- ▶ Establish data-driven intervals and acceptance criteria.
- ▶ Control stored-energy and LOTO hazards during maintenance.
- ▶ Trend failures unique to DC and power electronics.
- ▶ Plan outage/cleaning to prevent surface tracking and contamination.
- ▶ Feed results into reliability dashboards for decision-making

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## COMMON TAGS:

Wind, Solar, Battery Storage, QEMW, QEMC, EMW, NFPA 70B, CSA Z463, Electrical Maintenance

# Electrical Equipment Maintenance: Codes & Standards

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Recommended students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Participants will learn how to prioritize assets, set inspection and testing intervals, apply predictive maintenance technologies, and document work to support compliance and reliability goals; improving failure findings and driving measurable Overall Equipment Effectiveness (OEE) and Mean Time Between Failures (MTBF). This course connects program requirements for specific tasks while integrating procedures with safety standards, and code requirements.

## CODES & STANDARDS REFERENCED:

NFPA 70E® – Standard for Electrical Safety in the Workplace  
NFPA 70B® – Standard for Electrical Equipment Maintenance  
CSA Z462 – Workplace Electrical Safety  
CSA Z463 – Maintenance of Electrical Systems  
ANSI/NETA MTS – Standard for Maintenance Testing  
Specifications for electrical power equipment & systems

## AUDIENCE:

Maintenance and operations personnel needing a practical roadmap to establish and maintain an Electrical Maintenance Program (EMP).

## COURSE LEARNING OBJECTIVES:

- ▶ Discuss the purpose, scope, and application of maintenance standards
- ▶ Explain how maintenance works alongside code and safety requirements
- ▶ Explore the significant shift from Guidelineto Standard.
- ▶ Identify components of an effective Electrical Maintenance Program (EMP).
- ▶ Review equipment conditions classifications according to standards
- ▶ List maintenance tests and time frames for general and specific equipment
- ▶ Estimate the financial and safety benefits of being standards-compliant
- ▶ Design an Electrical Maintenance Program (EMP) with preventive maintenance tasks based on recommendationsfrom the standards

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## COMMON TAGS:

QEMW, QEMC, EMW, NFPA 70B, CSA Z463, Electrical Maintenance

# Electrical Equipment Maintenance: Distribution

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Recommended students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Build practical skills for inspecting, testing, troubleshooting, and repairing electrical distribution equipment used in industrial, commercial, and facility power systems. Participants learn to safely service common distribution assets such as switchgear, panelboards, circuit breakers, transformers, motor control centers, and protective devices. The course will focus on safe work practices, standard wiring installation and procedures, reliability-centered maintenance, and condition-based maintenance to reduce downtime and extend equipment life.

## CODES & STANDARDS REFERENCED:

NFPA 70E® – Standard for Electrical Safety in the Workplace  
NFPA 70B® – Standard for Electrical Equipment Maintenance  
CSA Z462 – Workplace Electrical Safety  
CSA Z463 – Maintenance of Electrical Systems  
ANSI/NETA MTS – Standard for Maintenance Testing Specifications for electrical power equipment & systems

## AUDIENCE:

Maintenance and operations personnel responsible for assets in accordance with a documented Electrical Maintenance Program (EMP).

## COURSE LEARNING OBJECTIVES:

- ▶ Identify common distribution equipment and major subcomponents: (switchgear, panelboards, transformers, MCCs, breakers, and power cables)
- ▶ Select appropriate test instruments (DMM, clamp meter, insulation resistance tester, thermography) to support maintenance and troubleshooting tasks.
- ▶ Perform and list routine inspections and preventive maintenance activities using standard checklists.
- ▶ Interpret nameplates, panel schedules, and one-line diagrams to determine ratings, protective coordination considerations, and service requirements.
- ▶ Recognize typical failure modes in distribution equipment.
- ▶ List appropriate maintenance intervals and task types based on equipment criticality, environment, and observed condition according to standards.

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## COMMON TAGS:

QEMW, QEMC, EMW, NFPA 70B, CSA Z463, Electrical Maintenance

# Electrical Equipment Maintenance: Substations

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Recommended students have prior electrical knowledge and experience.

**COURSE DESCRIPTION:** Participants will focus on Electrical Preventive Maintenance (EPM) aligned with industry standards. Learn how to prioritize substation assets by inspection, testing, and condition-based tasks, determining intervals, and documenting work to support compliance and reliability goals. The course defines practices recommend for acceptance testing, outage planning, and CMMS integration, while aligning maintenance execution with published standards and codes.

## CODES & STANDARDS REFERENCED:

NFPA 70E® – Standard for Electrical Safety in the Workplace  
NFPA 70B® – Standard for Electrical Equipment Maintenance  
CSA Z462 – Workplace Electrical Safety  
CSA Z463 – Maintenance of Electrical Systems  
ANSI/NETA MTS – Standard for Maintenance Testing Specifications for electrical power equipment & systems

## AUDIENCE:

Maintenance and operations personnel responsible for assets in accordance with a documented Electrical Maintenance Program (EMP).

## COURSE LEARNING OBJECTIVES:

- ▶ Explain the purpose, scope, and key elements of an Electrical Preventive Maintenance (EPM) program for substations.
- ▶ Build an asset register and prioritize substation assets by criticality using risk factors (safety, system impact, downtime cost, environmental risk).
- ▶ Identify appropriate inspection and test methods for substation equipment.
- ▶ List task frequencies and define condition-based triggers to increase or decrease maintenance, aligned with manufacturer and industry standards.
- ▶ Develop equipment-specific job plans and inspection checklists (transformers, MV/HV breakers, disconnects, switchgear, bus, instrument transformers, DC station service/UPS, grounding).
- ▶ Discuss the responsibilities of overseeing contractors (qualifications, test deliverables, acceptance criteria, and reporting standards).

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## COMMON TAGS:

QEMW, QEMC, EMW, NFPA 70B, CSA Z463, Electrical Maintenance

# Courses

**Systems**



# Electrical Power Systems

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	2 Days
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Students must understand basic electrical principles and have prior electrical experience.

**COURSE DESCRIPTION:** An introduction to electric power is transmission, distribution, and use in industrial and commercial environments. Learners explore the architecture of power systems, including one-line diagrams, electrical drawings, system components (raceways, grounding and bonding, transformers, motor control centers, overcurrent protective devices, and power quality). The course emphasizes real-world applications such as load calculations, fault concepts, and basic protection principles to support reliable, efficient, and safe operation.

## CODES & STANDARDS REFERENCED:

NFPA 70B® – Standard for Electrical Equipment Maintenance

NFPA 70E® – Standard for Electrical Safety in the Workplace

CSA Z462 – Workplace Electrical Safety

CSA Z463 – Maintenance of Electrical Systems

NEC – National Electrical Code/ CEC –Canadian Electrical Code

## AUDIENCE:

New or cross-training technicians, electricians, and engineers needing power-system foundations.

## COURSE LEARNING OBJECTIVES:

- ▶ Identify the structure of an electrical power system
- ▶ Identify the function of each major stage in a power system
- ▶ Explain real/reactive/apparent power, and basic power factor principles
- ▶ Interpret system configuration and ratings using published documentation
- ▶ Identify and compare key power-system components including their purpose and operating characteristics.
- ▶ Calculate electrical values needed for system operation (load/demand basics, current from kW/kVA, voltage drop concepts, raceway and box fill, and transformer loading considerations).
- ▶ Develop a simple preventive/condition-based maintenance strategy aligned to equipment criticality and operating environment.

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## COMMON TAGS:

QEW, Arc-Flash Safety, Electric Shock, 70E, 70B, NEC, Z462, Z263, Authorized Person Training

# Electrical Power Systems: Grounding & Bonding

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	2 Days
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Students must understand basic electrical principles and have prior electrical experience.

**COURSE DESCRIPTION:** An introduction to electric power principles and practices to control touch/step potentials, support protection, and improve power quality (PQ); includes test/inspection methods to verify condition. The course emphasizes real-world applications such as fault concepts, and basic protection principles to support reliable, efficient, and safe operation.

## **CODES & STANDARDS REFERENCED:**

NFPA 70E® – Standard for Electrical Safety in the Workplace

CSA Z462 – Workplace Electrical Safety

NEC – National Electrical Code

CEC – Canadian Electrical Code 22.1

Various IEEE standards for grounding systems and bonding

## **AUDIENCE:**

New or cross-training technicians, electricians, and engineers responsible for grounding, bonding, and power quality troubleshooting.

## **COURSE LEARNING OBJECTIVES:**

- ▶ Explain grounding system objectives and configurations.
- ▶ Evaluate bonding practices for enclosures and raceways.
- ▶ Relate grounding to protection performance and shock risk.
- ▶ Verify grounding via inspection/testing and interpret results.
- ▶ Recommend corrective actions and documentation updates.
- ▶ Integrate grounding checks into maintenance planning

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## **COMMON TAGS:**

Electric Shock, NFPA, Grounding, NEC, Bonding, Authorized Person Training

# Electrical Power Systems: Print Reading & Symbols

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Students should understand basic electrical principles such as current flow. Prior electrical experience is beneficial.

**COURSE DESCRIPTION:** A guide to the proper interpretation of electrical one-lines, schematics, and wiring diagrams. Functional knowledge of system architecture and power flow to support maintenance, testing, and safe work planning.

## CODES & STANDARDS REFERENCED:

OSHA 29 CFR Part 1910, Subpart S – Electrical

NFPA 70E® – Standard for Electrical Safety in the Workplace

CSA Z462 – Workplace Electrical Safety

NEC – National Electrical Code/ CEC – Canadian Electrical Code

## AUDIENCE:

New or cross-training technicians, electricians, and engineers needing fundamental understanding of power-system design and layouts.

## COURSE LEARNING OBJECTIVES:

- ▶ Decode symbols and conventions across drawing types.
- ▶ Navigate multi-sheet packages efficiently.
- ▶ Cross-check drawings vs. field conditions to prevent errors and reduce risk.
- ▶ Use prints to plan isolation, LOTO, and test steps.
- ▶ Capture redline changes and manage configuration control.
- ▶ Communicate print-based plans during job briefings.

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## COMMON TAGS:

PrintReading, ANSISymbols, One-Line, Schematic, Authorized Person Training, Troubleshooting

# Electrical Power Systems: Troubleshooting Techniques

<b>TYPE:</b>	Onsite, In-person, Virtual
<b>DURATION:</b>	1 Day
<b>CAPACITY:</b>	15 Students
<b>PREREQUISITES:</b>	Students must understand basic electrical principles and have prior electrical experience.

**COURSE DESCRIPTION:** A guide to systematic troubleshooting approaches to diagnose common power-system issues (loss of power, nuisance tripping, overheating, undervoltage, unbalance), using evidence from symptoms, diagrams, and measurements, as well as system history. Ensuring that troubleshooting tasks identify, assess, and control electrical risk posed to the worker.

## CODES & STANDARDS REFERENCED:

OSHA 29 CFR Part 1910, Subpart S – Electrical  
NFPA 70B® – Standard for Electrical Equipment Maintenance  
NFPA 70E® – Standard for Electrical Safety in the Workplace  
CSA Z462 – Workplace Electrical Safety  
CSA Z463 – Maintenance of Electrical Systems  
NEC – National Electrical Code/ CEC –Canadian Electrical Code

## AUDIENCE:

Technicians/engineers who diagnose system abnormalities and restore service safely.

## COURSE LEARNING OBJECTIVES:

- ▶ Apply systematic workflows to isolate faults.
- ▶ Use instruments safely; validate readings and assumptions.
- ▶ Correlate symptoms to components/protection causes.
- ▶ Create evidence-based corrective action plans.
- ▶ Document findings and capture lessons learned.
- ▶ Coordinate with operations for safe switching/LOTO.

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## COMMON TAGS:

QEW, Arc-Flash Safety, Electric Shock, 70E, 70B, NEC, Z462, Z263, Authorized Person Training, Troubleshooting



**Thank  
You**

Questions?

Email [trainingservices@shermco.com](mailto:trainingservices@shermco.com)