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Combined CSA Z462 LV & HV Electrical Safety Training

View Course Details

COURSE DATES AND TIMES

March 11-12 , 2026

10:00 am - 4:30 pm ET

May 13-14 , 2026

10:00 am - 4:30 pm ET

Our popular Combined CSA Z462 Arc Flash Training and High Voltage Safety training course is designed for frontline workers responsible for electrical systems. This standard covers safe work practices for electrical hazards in the workplace. Students will gain a solid understanding of hazards encountered while operating or maintaining electrical installations in the low-voltage (below 750V) class, including a full understanding of arc-hazard categorization, appropriate PPE selection, and safe electrical work procedures, as well as the high-voltage class.

CSA Z462 Arc Flash Training

High Voltage Electrical Safety Training

This 12-Hour course is designed to help organizations identify shock and arc-flash hazards and prevent injuries and incidents associated with them.

Our Combined Arc Flash/Electrical Safety Awareness Workshop is taught by a certified electrical expert with more than 25 years of field experience in electrical safety and maintenance. This electrical safety workshop examines workplace hazards and emphasizes that employees proactively recognize hazards and apply safe work practices to achieve zero accidents.

CSA Z462 sets a recommended standard for Electrical Safety in Canada. It states that electrical workers "shall be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with

their respective jobs or task assignments. Workers shall be trained to identify and understand the relationship between electrical hazards and possible injury."

Our LV and HV Electrical Safety Training Course Offers

Our Electrical Safety Training Course provides a comprehensive blend of instruction and hands-on learning. Participants engage with electrical safety videos, physical demonstrations of PPE, and group discussions that encourage problem-solving and real-world application. The course includes a formal test at the end to confirm understanding and reinforce key concepts.

The training explains essential job briefing requirements and covers hazardous energy control through proper lockout/tagout procedures. It also guides workers through safe switching practices, clearance procedures, and the correct selection and use of personal protective equipment, including flame-resistant clothing and rubber protective gear.

Participants learn about testing and using live-line tools, along with the precautions required when working on or near exposed lines. The course details safe methods for de-energizing lines and equipment, as well as the principles and application of personal protective grounding to ensure worker protection.

Substation safety is addressed extensively, including awareness of special conditions that may affect work practices. Additional modules cover the unique hazards associated with capacitors, current transformers, potential transformers, and the importance of proper fuse and relay coordination to maintain system integrity and prevent electrical incidents.

Learning Outcomes

- Recognize medium-voltage and high-voltage electrical sources, equipment hazards, and the conditions that create shock and arc-flash risks.
- Identify the engineering and administrative controls that protect workers from hazardous energy in industrial and utility environments.
- Understand how induced currents, step potentials, and ground gradients form around high-voltage systems and how to mitigate their dangers.
- Safely select, install, and maintain temporary protective grounds to prevent electrical injury during switching operations and maintenance work.
- Interpret single-line diagrams and develop safe switching sequences to isolate equipment, validate operating orders, and maintain required documentation.

- Identify electrical safety training requirements for qualified electrical workers under NFPA 70E, CSA Z462, OSHA, and industry best practices.
- Perform shock hazard analysis by defining protection boundaries, selecting proper PPE, and establishing an electrically safe work condition.
- Explain arc-flash hazards, incident energy, protection boundaries, and the factors that influence arc-flash severity in LV and HV systems.
- Select appropriate arc-rated PPE using NFPA 70E/CSA Z462 methods, including category tables, testing requirements, and maintenance
- guidelines.
- Apply effective job safety planning, including hazard identification, risk assessment, switching coordination, and control measures for safe electrical work.

Related Courses

- Electrical Safety Training Courses
- Electrical Safety For EHS Managers
- Electrical Safety Program Development
- OSHA Lockout Tagout (LOTO)
- Electrical Safety For Non-Electrical Workers
- Arc Flash Channel

WHO SHOULD ATTEND

- Utility Workers Who Work Around High-Voltage Power Lines, Overhead Or Underground Cabling Systems

- Substation Electricians
- Electrical Engineers
- Commercial And Industrial Electricians
- Instrumentation Mechanics
- Electrical Technicians
- Managers & Safety Professionals
- Electrical Engineers
- Plant Electricians
- Qualified Electrical Workers
- Instrumentation Mechanics
- Electrical Technicians
- Managers & Safety Professionals

STUDENTS RECEIVE

- Arc Flash and HV Electrical Safety Training Certificate
- 1.2 Continuing Education Unit (CEU) Credits
- 100-Page Electrical Safety Handbook - Value $20 (Details Below)
- A **FREE** Magazine Subscription (Value $25)
- **$100** Coupon Toward Any Future Electricity Forum Event (Restrictions Apply)

- Course Presentations In PDF Format

- NOTE: This Course DOES NOT INCLUDE A CSA Z462* Standard. Copies Of The CSA Z462* Standard Must Be Purchased Separately From the Canadian Standards Association And Brought To The Course.

COURSE OUTLINE

DAY ONE

UNDERSTANDING ELECTRIC POWER SYSTEMS

- Time-Current Curves & Power System Studies
- Electrical Arc Characteristics

PREPARING TO WORK SAFELY

- Hazard Risk Analysis/ Task Assessment
- Assessment To Lockout Or Work Energized
- Overview Of Lockout Fundamentals
- Working Energized Defined
- Preparing A Job Briefing And Planning Checklist
- How To Plan For An Energized Electrical Work Permit
- Elements Of An Energized Electrical Work Permit

ELECTRICAL HAZARDS

- Electrical Shock
- Effects Of Current On Human Beings
- Shock Protection Boundaries
- Approach To Energized Electrical Conductors Or Circuit Parts Operating At 50 Volts Or More
- Arc Flash/ Arc Blast
- Elements And Characteristics Of An Arc Flash Event
- Arc Flash Hazard Analysis
- Arc Flash Protection Boundary For Voltages Between 50 And 600 Volts

ESTABLISHING AN ELECTRICALLY SAFE WORK CONDITION

The most effective way to prevent electrical injury is to completely remove the source of supply. This section will discuss the methods and process of achieving an electrically safe work condition. Including the following:

Working On or Near De-energized Electrical conductors or Circuit Parts That Have Lockout Devices Applied

- Principles Of Lockout Tagout Execution

- A. Employee Involvement
- B. Training
- C. Plan
- D. Control Of Energy
- E. Identification
- F. Voltage
- G. Coordination

Hazardous Electrical Energy Control Procedures

- A. Individual Qualified Employee Control Procedure
- B. Simple Lockout Tagout Procedure
- C. Complex Lockout Tagout Procedure
- D. Coordination
- E. Training And Retraining

Equipment

- A. Lock Application
- B. Lockout Tagout Device
- C. Lock Out Device
- D. Tagout Device
- E. Electrical Circuit Interlocks
- F. Control Devices
- G. Procedures
- H. Planning

DETERMINING SAFE APPROACH DISTANCE

- Determining Safe Approach Distance
- Definitions Of Boundaries And Spaces
- Limits Of Approach
- Shock Hazard Analysis
- Shock Protection Boundaries
- Limited Approach Boundary
- Restricted Approach Boundary
- Prohibited Approach Boundary
- Hazard Boundary

Shock Hazard Boundaries

- Limits Of Approach
- Preparation For Approach
- Qualified Persons, Safe Approach Distance
- Electrical Conductors Or Circuit Parts For Shock Protection
- Safe Working Distances From Energized Conductors

BASIC METHOD FOR DETERMINING ARC FLASH HAZARD ASSESSMENT

- Breakdown And Characteristics Of The 4 Hazard Risk Categories - NEW

- Selection Of Personal Protective Equipment For Various Tasks
- Hazard/ Risk Category Classification
- Protective Clothing And Personal Protective Equipment (PPE)
- Protective Clothing Characteristics
- Factors In the Selection Of Protective Clothing And Equipment
- Two Category, Flame Resistant (HRC/ Hazard Risk Category) Clothing System - NEW
- Layering Protective Clothing And Total System Arc Rating
- Arc Rating, Arc Thermal Performance Value (ATPV) And Break-Open Threshold Energy (EBT)
- Brief Overview Of Applicable ASTM Standards For Protective Clothing And PPE

Safety-related Electrical Maintenance

- Introduction
- Frequency Of Maintenance Tests
- Maintaining Electrical Drawings
- Maintenance Standards

Electrical Hazard Labels, Arc Flash and Shock Labelling

- General
- Canadian Electrical Code Rule 2-306 Shock And Arc Flash Warning Label
- Arc Flash Label Example
- Detailed Arc Flash Hazard Analysis Label - NEW

NEW ANNEX: Prevention of Shock Injuries from Electrostatic Discharges

Prevention of Shock Injuries from Electrostatic Discharges describes workplace scenarios, such as high-speed network operations, in which the potential for shock injury from electrostatic discharge exists. This Annex identifies methods to prevent, control, and protect personnel from injury.

NEW: DC Safety-related Work Practices

The 3rd edition of Z462 provides considerably more information on safety-related practices for work on and around DC systems. A new Shock Protection Boundary Table for DC systems and an arc flash energy calculation method for DC systems have been added. Extensive revisions have been made to deal with safety-related practices for batteries, battery rooms and battery enclosures. Both high value for anyone working on or around DC equipment. This new additional information is essential for working on DC systems.

ARC FLASH SOLUTIONS

- Arc Flash Study Analysis And Implementation

- Power System Upgrades
- Arc Resistant Switchgear
- Circuit Breaker Retrofitting
- Remote Breaker Racking
- Regular Maintenance And Testing
- Arc-Rated Power Switchgear
- Light Sensing Trip Breakers
- GE Arc Vault Protection System

CSA Z462 PPE CLOTHING REQUIREMENTS, Arc Rated CLOTHING TESTING STANDARDS, HOW TO ESTABLISH A PPE PROGRAM IN YOUR COMPANY

- The Evolution Of Arc-Resistant (AR Or HRC) Fabrics
- Changes In Clothing Requirements In Electrical Work - New
- The Various Types Of HRC Fabrics That Are Available In The Marketplace
- HRC Fabrics And The Effects Of Undergarments
- Review The Technology And Effectiveness Of Inherently Flame-Resistant Fibres Vs Chemically Treated Fabrics
- Developing A PPE Program In Your Company
- Assessing The Correct Arc Flash Hazard And Choosing The Right Level Of Protective Clothing
- Company Training And Worker Compliance
- Documentation **QUIZ**
- A Quiz To Ensure Student Understanding Of The Day's Information

DAY TWO

Recognizing Electrical Safety Hazards - Where Do They Exist?

A detailed review of critical electrical safety hazards created by energized electrical equipment:

- Insulation
- Power Cables
- Power Transformers
- Instrument Transformers
- Dealing With Fault Currents
- Disconnect Switches
- Switchgear
- Circuit Breakers
- Fuses
- Electrical Relays
- Motor Starters
- AC/DC Motors
- Capacitors
- Emergency UPS Systems

Resolving Electrical Safety Hazards

Objective: Determine the controls used to protect workers from all energy sources created in the workplace. Benefits of a safe workplace include fewer injuries, lower worker compensation costs, reduced service interruptions, greater protection of capital investment, and increased uptime. This section will provide you with a detailed blueprint that maximizes electrical safety and all the benefits it generates.

- Hierarchy Of Controls
- Management Control
- Legislation
- Electrical Code
- Purchasing Controls
- Engineering Controls
- Training
- Safety Documentation
- Rules
- Safe Work Practices
- Safe Work Procedures
- Codes Of Practice
- Operating Procedures
- Permits & Clearances
- Switching Procedures
- Physical Equipment
- Personal Protective Equipment
- Safety Equipment
- Signs And Barriers
- Equipment Protection
- Interlock
- Grounding
- Field Control
- Inspections
- Job Planning
- Pre-Job Meeting
- Hazard Identification
- Hazard Reporting
- Work Methods
- Limits Of Approach
- Switching Practices

GENERAL ELECTRICAL SAFETY REQUIREMENTS

- Review Of Standards And OH&S Regulations
- HV Electrical Qualifications
- Poles And Structures
- Obstructions On Poles
- Properly Informing Electrical Workers
- Working In Service Rooms
- Space Around Equipment
- Working With HV Test Equipment

- Insulated Aerial Devices

SWITCHING

This section of the course will instruct on how to: interpret and use a single-line diagram to write a switching sequence to safely isolate an electrical device for work; validate existing operating orders and switching procedures; and develop and maintain mandated documentation for all electrical equipment isolation and maintenance work.

- Single Line Diagrams
- Using Prints
- Electrical System Drawings
- Safety Documentation
- Isolation
- Lockout/Isolation
- Switching Workshop

WORKING ON HIGH VOLTAGE ELECTRICAL EQUIPMENT

- Isolation And Lockout
- Warning Signs

WORKING ON DE-ENERGIZED HIGH VOLTAGE POWER SYSTEMS

- Isolation And Lockout
- Person In Charge
- Switching Sequences
- Isolating Devices
- Grounding And Blocking
- Working With Multiple Authorities

WORKING CLOSE TO ENERGIZED HIGH VOLTAGE EQUIPMENT AND CONDUCTORS

- Minimum Clearances
- General Limits Of Approach
- Assurance In Writing
- Assurance Not Practicable
- When Is A Worker Specially Trained And Qualified
- Adjusted Limits Of Approach
- Emergency Work Procedures
- Authorization By Owner To Perform Work

COURSE SCHEDULE:

Both days:

Start: 10 a.m. Eastern Time
Finish: 4:30 p.m. Eastern Time

Contact us Today for a FREE quotation to deliver this course at your company's location.

Request Quote