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LOW VOLTAGE ARC FLASH/ ELECTRICAL SAFETY WORKSHOP

Are you in compliance with the CSA Z462-12 Arc Flash Standard?*

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1-day course **$399**

www.electricityforum.com/forums/one-day-csa-z462.html

MEDIUM & HIGH VOLTAGE ELECTRICAL SAFETY WORKSHOP

1-day course **$399**

MAY 7, 2015 - EDMONTON, AB
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COMBINE BOTH WORKSHOPS FOR A 2-DAY COURSE ONLY **$699**

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OUR WORKSHOPS FEATURE WRITTEN EXERCISES, VIDEO PRESENTATIONS AND LIVE PPE DEMONSTRATIONS!!

ARC FLASH/ ELECTRICAL SAFETY AWARENESS WORKSHOP

This Interactive day-long Workshop will involve students in learning exercises, interactive group participation, video and live demonstrations of PPE. Students will demonstrate an understanding of arc flash hazards and PPE protection by passing a simple written test at the end of the course! Each Student who takes this test will receive a workshop certitiicate of completion and CEU credit.

WHAT MAKES OUR WORKSHOP DIFFERENT?

Our ALL NEW 1-day ARC FLASH/ ELECTRICAL SAFETY Workshop is designed for front-line workers who are responsible for electrical systems. 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 the arc hazard categorization, appropriate PPE selection and safe work procedures.

WHO SHOULD ATTEND:

Engineers, Electricians, Instrumentation Mechanics, Technicians, Managers & Safety Professionals

one-day program outline

INSTRUCTOR: **John Robin**
Arc Flash/Electrical Safety Consultant, The Electricity Forum

UNDERSTANDING ELECTRIC POWER SYSTEMS
- Basic Electrical Theory and Definitions
- Electrical Drawings
- Ground Fault Systems
- Time-Current Curves & Power System Studies
- Electrical Arc Characteristics

RECOGNIZING ELECTRICAL SAFETY HAZARDS
- 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

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
- Working On or Near De-energized Electrical conductors or Circuit Parts That Have Lockout Devices Applied
- Principles of Lockout Tagout Execution
- Responsibility
- Procedures
- Form of Control
- Audit Procedures
- Hazardous Electrical Energy Control Procedures
- Equipment

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
- Basis for Distance - Approach Boundaries to Energized
- Electrical Conductors or Circuit Parts for Shock Protection

BASIC METHOD FOR DETERMINING ARC FLASH HAZARD ASSESSMENT
- Breakdown and characteristics of the Hazard Risk Categories
- Selection of Personal Protective Equipment for Various Tasks
- Hazard/ Risk Category Classification
- Protective Clothing and Personal Protective Equipment (PPE)
- Protective Clothing Characteristics
- Factors in selection of Protective Clothing and Equipment
- Two Category, Flame Resistant (FR) Clothing System
- 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- Tables 2 and 3

SAFETY-RELATED ELECTRICAL MAINTENANCE
- Introduction
- Risk Categories and Maintenance Justification
- Reliability Centered Maintenance (RCM)
- 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

SUBSTATION SYSTEMS AND EQUIPMENT

PREVENTION OF SHOCK INJURIES FROM ELECTROSTATIC DISCHARGES

DC SAFETY-RELATED WORK PRACTICES

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

PPE CLOTHING REQUIREMENTS, FR CLOTHING TESTING STANDARDS
- The evolution of Flame Resistant (FR) fabrics
- The various types of FR fabrics that are available in the marketplace
- FR fabrics and the effects of undergarments
- Review the technology and effectiveness of inherently flame resistant fibers 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
- A quiz to ensure student understanding of the day's information

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- Regular Maintenance and Testing

WWW.ELECTRICITYFORUM.COM/FORUMS/ONE-DAY-CSA-Z462.HTML

MEDIUM AND HIGH VOLTAGE ELECTRICAL SAFETY WORKSHOP

This 1-day Medium Voltage/High Voltage electrical safety course is designed for electrical maintenance personnel responsible for Medium Voltage/High Voltage electrical systems, supervisory and health and safety professionals who are responsible for overseeing high voltage electrical work. Dynamic and highly concentrated, this course places maximum emphasis on safety when working on or near energized electrical equipment.

LEARNING OUTCOME

- Learn to recognize all Medium Voltage/High Voltage electrical sources and hazards created by various high voltage electrical equipment and devices.
- Determine the controls used to protect workers from all energy sources created in the work place.
- Learn the dangers of how induced currents and ground gradients are produced
- Learn how to safely select, install and maintain temporary grounds for protection of the high voltage electrical worker.

WHO SHOULD ATTEND:

This course is a must for electrical engineers, electrical maintenance personnel, plant electricians, electrical contractors, power specialists, safety managers, consultants and technologists responsible for the operation or maintenance of electrical systems, electrical technicians, inspectors, and other employees responsible for the safe operation and maintenance of electrical systems in a commercial, industrial, institutional setting.

one-day program outline

INSTRUCTOR: **John Robin**
Arc Flash/Electrical Safety Consultant, The Electricity Forum

RECOGNIZING ELECTRICAL 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 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.
- 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 HV 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

WWW.ELECTRICITYFORUM.COM/FORUMS/HIGH-VOLTAGE-ELECTRICAL-SAFETY.HTML

WAYS TO REGISTER

(905) 686-1040

(905) 686-1078

ON-LINE:
www.electricityforum.com/forums/2-day-electrical-safety.html

MAIL:
The Electricity Forum
218-1885 Clements Road,
Pickering, ON L1W 3V4

ATTENDEE INFORMATION

NAME _____

TITLE _____

COMPANY _____

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Interested in on-site Arc Flash/Electrical Safety training?
Save the cost of travel and hotels AND save on our regular public enrollment registration fees.
For more information, contact Randy Hurst, President, The Electricity Forum, (905) 686-1040.
You can write to randy@electricityforum.com or you can go to our on-site electrical training quotation page and ask for a FREE quotation: www.electricityforum.com/on-site-training-feedback.htm

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SAVE $50

REGISTER AND PREPAY
14 Days prior to course date and receive an early bird discount of $50 off the full price.

WHEN & WHERE

(Please check the date/location where you want to attend the course)

Low Voltage Arc Flash/Electrical Safety Awareness Workshop

Richmond, BC - May 5, 2015
Holiday Inn Vancouver Airport
10720 Cambie Road, Tel: 604-821-1818

Edmonton, AB - May 6, 2015
Radisson Hotel Edmonton South
4440 Gateway Boulevard N., Edmonton
Tel: 780-437-6010

Winnipeg, MB - May 8, 2015
Four Points by Sheraton Winnipeg Airport
1999 Wellington Avenue
Winnipeg, MB
Tel: 204-775-5222

Toronto, ON - May 11, 2015
Hampton Inn and Suites
3279 Caroga Drive, Mississauga, ON
Tel: 905-672-4820

St. John's, NL - May 13, 2015
Hampton Inn & Suites
411 Stavanger Drive
Tel: 709-738-4888

Medium and High Voltage Electrical Safety Workshop

Edmonton, AB - May 7, 2015
Radisson Hotel Edmonton South
4440 Gateway Boulevard N., Edmonton
Tel: 780-437-6010

Toronto, ON - May 12, 2015
Hampton Inn and Suites
3279 Caroga Drive, Mississauga, ON
Tel: 905-672-4820

REGISTRATION FEES

The registration fee to attend the one-day **Low Voltage Arc Flash/Electrical Safety Awareness Workshop** is **$399+Tax**. The registration fee includes: all course materials, a free magazine subscription, our latest Electrical Safety Handbook, a $100 coupon toward any future 2015 Electricity Forum event (restrictions apply), refreshments, lunch.
NOTE: This Workshop DOES NOT INCLUDE A CSA Z462-12 Standard. We recommend that students purchase the standard separately from Canadian Standards Association and bring it to the workshop.

The registration fee to attend the one-day **MV/HV Electrical Safety Workshop** is **$399.00+Tax**. The fee includes: Course presentation materials, a free magazine subscription, a $100 coupon toward any future 2015 Electricity Forum event (restrictions apply), refreshments, lunch. Registration for this course also includes FREE Electricity Forum Electrical Safety Handbook (Value $20).

Attend the Low Voltage Arc Flash/Electrical Safety Workshop AND the MV/HV Electrical Safety Workshop and receive the discount price of **$699.00 + Tax** for both days.

CANCELLATION AND REFUND POLICY

Registration fees are refundable only upon receipt of written notification 10 days prior to the conference date, less a 10 percent service charge. Substitution of participants is permissible. The Electricity Forum reserves the right to cancel any conference it deems necessary and will, in such event, make a full refund of the registration fees.

** The Electricity Forum is an independent provider of electrical safety training and is a Corporate Supporter of the CSA. All trademarks and copyright associated with the [CSA Z462-12 Arc Flash Standard and CSA Z463 Maintenance of Workplace Electrical Systems] are the intellectual property of the Canadian Standards Association and the Electricity Forum claims no ownership of rights thereto.*