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## Arc Flash Protection Training - NFPA 70e Electrical Safety

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

<https://www.electricityforum.com/onsite-training-rfq>

Our electrical safety training programs are instructed by some of North America's leading experts on Arc Flash and Arc Blast Hazard Protection and Mitigation, will present new content NOT covered in our previous Arc Flash seminar programs and report on recent code revisions from NEC and NFPA, and the Canadian Electrical Code. We teach general electrical safety principles and train electrical professionals on how to best develop an effective electrical safety program. Between these two elements, there will be plenty of examples and exercises for delegates to follow and then take back and apply to their electrical safety work practices.

Our Arc Flash Seminar will teach you how to:

- Define short circuits and electrical arcs.
- Understand arc flash parameters.

- Determine energy released during a short circuit and why you need to be protected.
- Learn techniques for reducing arc flash energy.
- Learn how to protect yourself and those around you from electrical hazards.
- Learn how to select proper personal protective equipment (PPE) for the right environment.

Dangers such as shock, electrocution, and arc blast will always be present on the job, but proper training and safety strategies can minimize the likelihood of injuries and fatalities. NFPA 70E - Electrical Safety in the Workplace - covers the full range of electrical safety issues from work practices to maintenance, special equipment requirements, and installation. In fact, OSHA in the United States already bases its electrical safety mandates on the comprehensive information in this important Standard.

### **Learning Objectives**

- Identify common factors of electrical accidents
- Understand the arrangement of the material in the NFPA 70E
- Explain the hazards of electrical work and their effects on the employee
- Describe the main elements in an electrical safe work program
- Identify the requirements for establishing an electrically safe work condition
- Identify the requirements for a shock risk assessment
- Establish approach boundaries for shock protection for qualified and unqualified employees
- Select personal protective equipment for shock protection
- Identify the requirements of an arc flash risk assessment
- Select safe work practices if an arc flash hazard is present
- Understand the use of the arc flash boundary
- Select personal protective equipment for arc flash protection

### **WHO SHOULD ATTEND**

Anyone whose job involves designing, reviewing, evaluating or installing electrical systems, including: designers, installers, engineers, electrical contractors, technicians, project managers, safety managers, inspectors, and others who are involved in hands-on electrical roles or maintenance planning.

- Industrial, commercial, institutional electrical professionals
- Electrical engineers
- Electrical technicians
- Plant electricians
- Linemen
- Electrical Supervisors
- Personnel who work on or near energized electrical equipment and systems

#### **STUDENTS RECEIVE**

- **FREE** 100-Page Digital Electrical Safety Handbook (Value \$20)
- **\$100 Coupon** Toward any Future Electricity Forum Event (Restrictions Apply)
- 1.4 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription (Value \$25.00)
- Course Materials in Paper Format

#### **COURSE OUTLINE**

##### **Electrical Hazards**

- FIVE MAIN FACTORS IN ELECTRICAL ACCIDENTS
- ELECTRICAL SHOCK
- ARC FLASH DEFINED
- INCIDENT ENERGY DEFINED

- ARC FLASH BURN INJURIES
- ARC BLAST PRESSURE
- INHALATION INJURIES

### **Existing and Proposed Standards**

- NFPA70E
- IEEE 1584
- OSHA
- OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS

### **Preparing to Work Safely**

- DETAILED DESCRIPTION OF A "JOB BRIEFING"
- HOW TO PREPARE AN "ENERGIZED WORK PERMIT" AS PER NFPA 70E

### **Determining Safe Approach Distance**

- DEFINITIONS OF ARC FLASH PROTECTION BOUNDARIES AND SPACES
- LIMITS OF APPROACH
- SHOCK HAZARD ANALYSIS
- SHOCK PROTECTION BOUNDARIES
- UNDERSTANDING AND APPLYING NFPA 70E TABLES
- LIMITED APPROACH BOUNDARY
- RESTRICTED APPROACH BOUNDARY
- PROHIBITED APPROACH BOUNDARY
- ARC FLASH PROTECTION BOUNDARY

### **Determining ARC Hazard Risk Category**

- USING NFPA70E TABLES

### **Fault Current Calculations**

- POWER SYSTEM SHORT CIRCUITS
- BOLTED FAULTS
- CALCULATING PROSPECTIVE SHORT-CIRCUIT CURRENT
- CALCULATING BOLTED FAULTS
- ARCING FAULTS
- CALCULATING ARCING FAULT CURRENT

### **Determination of Arcing Fault Clearing Time**

- TIME CURRENT CURVES
- COORDINATION STUDIES

### **Arc Flash Protection Boundary Calculations**

- DETAILED EXAMPLES AND EXERCIZES

### **Determining Arc Flash Hazard Risk Category**

- DETAILED EXAMPLES AND EXERCIZES
- SIMPLIFIED TABLE APPROACH
- MATRIX TABLE APPROACH
- SINGLE LINE DIAGRAM
- SHORT CIRCUIT STUDY REPORT

- COORDINATION STUDY REPORT
- EXERCISE #1 - HAZARD/RISK CATEGORY FOR AN MCC
- EXERCISE #2 - HAZARD/RISK CATEGORY FOR AN MCC
- EXERCISE #3 - HAZARD/RISK CATEGORY FOR POWER CIRCUIT BREAKER SWITCHGEAR
- EXERCISE #4 - HAZARD/RISK CATEGORY FOR METAL CLAD SWITCHGEAR 1Kv AND ABOVE

### **Incident Energy Exposure Calculations**

- SELECTING THE CORRECT LEVEL OF PPE
- NFPA 70E CALCULATION METHOD
- CALCULATING ARC IN A CUBIC BOX
- COMPARISON OF "ARC IN OPEN AIR" TO "ARC IN A BOX"
- IEEE 1584 METHOD

### **Arc Flash Hazard Analysis**

- DEMONSTRATION OF VARIOUS SOFTWARE PACKAGES
- ARC FLASH LABELS
- NEC 2002 EDITION

### **Practical solutions for Reducing Arc-Flash Hazard**

- MINIMIZE RISK WITH GOOD SAFETY PRACTICES
- CONSIDERATIONS FOR NEW EQUIPMENT
- REDUCE THE AVAILABLE FAULT CURRENT
- HOW TO INCREASE WORKER DISTANCE
- PROVIDE FASTER TRIPPING TIME

## **COURSE SCHEDULE**

### **Both Days:**

Start: 8:00 a.m.

Coffee Break: 10:00 a.m.

Lunch: 12:00 noon

Restart: 1:15 p.m.

Finish: 4:30 p.m.

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