



**Martin Technical™**

**Qualified Electrical Worker  
Certification & Electrical  
Safety Training  
Proposal**

**Overview**

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## **DISCLAIMER & NOTICE**

OSHA requires that only a “Qualified Person” may work on or around exposed energized equipment and defines that a “Qualified Person” as is “one who has received training in and has demonstrated skills and knowledge in the construction and operation of electric equipment and installations and the hazards involved.”

While OSHA defines what a “Qualified Person”, they do not define specifically “how” to determine if a worker is a “Qualified Person” or what specific testing or observations are required and leaves this decision to each employer. There is no legal requirements on determining “Qualified Person” status and therefore, it’s up to each employer to determine what their acceptable standards and values are for determining “Qualified Person” status.

Employers may choose to use the Martin Technical Qualified Electrical Worker Certification & Electrical Safety Training Program as their adopted program and standards for meeting OSHA “Qualified Person” requirements, however, Martin Technical makes no claims, guarantees or warranties on the program fulfilling any OSHA standards or regulations. It is up to each employer / customer to determine if this Martin Technical program meets their requirements for “Qualified Person” status.

## Qualified Electrical Worker Certification & Electrical Safety Training Program

### OBJECTIVES

- To help workers avoid shock, fire and arc flash related accidents.
- To provide a platform and process to help meet compliance with OSHA CFR Subpart S 1910 and NFPA by providing:
  - Electrical safety and arc flash 70E training
  - Testing and evaluation of worker electrical safety skills on the tasks they perform
  - Testing and evaluation of worker electrical safety knowledge on the tasks they perform
- To identify which tasks individual workers are proficient at and which ones they need more training in order to work safely.
- To provide training to those workers that need it in order to work safely.

### SCOPE & PURPOSE

This Qualified Electrical Worker Certification & Electrical Safety Training Program helps with OSHA Subpart S, 1910 and NFPA requirements for “Qualified Persons”. OSHA states that only a “Qualified Person” is permitted to work on or near exposed energized parts and that a “Qualified Person” is “one who has received training in and has demonstrated skills and knowledge in the construction and operation of electric equipment and installations and the hazards involved.”

Establishing “Qualified Person” status is mandatory for all individuals exposed to the hazards of electrical energy who are employed at US company locations including wholly-owned facilities as well as affiliate and leased facilities where the company has responsibility for facility operations through an operating (or similar) agreement.

This program also helps provide training and information to workers to help them work safely around electrical equipment and avoid accidents.

### WORK PROCESS

#### **1. PRE-VISIT DATA COLLECTION & NEEDS ASSESSMENT**

The first step in developing a Qualified Electrical Worker Certification Program is to identify the types of skills required to meet the objectives of maintenance, operation, and project work on all electrical equipment. This includes identifying what tasks are performed by the maintenance or installation technicians, what specific equipment they are working on and what tools they might be using.

This process is directed by an electrical safety subject matter expert and is completed by phone interviews and exchange of data that might include listing of electrical equipment, maintenance logs or specification sheets for the equipment being worked on.

This information is required in order to develop a training and testing program that is specific to the workers, the tasks they perform, the equipment they perform them on and the tools they use to work on the equipment.

## **2. SITE VISIT & EVALUATION**

Although the core information can be established during the pre-visit data collection stage, an on-site visit is normally required in order to fully understand and prepare the program. During this visit, a Martin Technical electrical safety expert will survey the equipment and workers in order to provide further information and details about the work being done at the facility and in order to identify any gaps.

This process may include taking photographs of electrical equipment for training purposes, interviewing maintenance technicians and managers, reviewing company electrical safety documentation and processes and identifying work processes.

## **3. FINAL TRAINING & TESTING DEVELOPMENT**

After all data and information has been collected, a Martin Technical electrical safety expert will develop testing and training materials specific to your needs.

## **4. TRAINING, TESTING & EVALUATION**

### **Training**

All training is conducted live and is customized to the needs of each customer. Training includes both core electrical safety knowledge and practices as well as specific equipment and tasks associated with the workforce and facility.

Core electrical safety training (see end of document full outline of core training program):

- OSHA, NFPA 70E and related codes and standards
- Effects of Electrical Hazards & Accidents
- Identifying Electrical Hazards
- Creating a Safe Work Environment (Work Permits, PPE, Approach Distances...)
- Safety Related Maintenance Requirements

Equipment and Task specific training:

- Compliance with company safety program standards
- LOTO procedures for each piece of equipment
- Equipment and task specific work and safety processes

### **Testing & Evaluation**

Workers tested and evaluated on their skills and knowledge of electrical safety in the following manners:

- Interviews
- Written Tests
- Skill Demonstrations

### Interviews

The interview questions are compilations of questions that will assist the evaluator in determining the knowledge level and comfort level of the workers as it relates to electrical safety.

### Written Tests

Written tests are used to help measure a worker's knowledge about general electrical safety information and procedures.

#### *Sample Test Question:*

Which of the following is not part of a general energy control procedure?

- a. Turning equipment off at the main disconnect.
- b. Turning off equipment at the controls.
- c. Notifying all employees that Lockout/Tagout is being done.
- d. Placing a padlock on the energy isolating device.
- e. Testing switches or valves to assure the control can't move to the activated position.

### Skill Demonstrations

Workers will be asked to demonstrate their skills in working in a safe manner while working on or around electrical equipment by performing such tasks as properly locking out / tagging out a piece of equipment, using a multimeter, tracing a circuit or properly identifying and using PPE.

## **DOCUMENTATION & CERTIFICATION**

### **Electrical Qualified Person Validation Sheet**

This will be provided for each worker in order to identify what tasks and electrical equipment they have been observed and tested as having the skill and knowledge to work safely. The document is signed by the Martin Technical electrical safety expert.

### **Electrical Safety Training Certificate and CEUs**

Each worker completing the electrical safety training sessions will be provided with a certificate of completion and 0.1 CEUs for every hour of the course completed.

### **Documentation Controls**

Each worker should have a file at their place of employment documenting their qualification status, background, training and any other certifications of qualifications. Martin Technical will retain copies of the Qualified Person Validation and Electrical Safety Training as a third party source.

### **NOTE:**

Please note the Disclaimer & Notice page in the introduction of this proposal.

## **DELIVERABLES**

The following are the deliverables upon completion of the program:

- Training on Core Electrical Safety and Equipment / Task Specific Processes
- Certificate of Training including CEUs for each individual
- Skills and Knowledge Testing on Electrical Safety Practices
- Certificate of Competency for all tasks passed for each individual
- Program platform for continued tracking of Qualified Workers

## **SELECTED TEAM MEMBERS**

Martin Technical features some of the most experienced electrical engineers, electrical safety experts and trainers in the industry, including the selected key personnel for this program:

### **Electrical Safety Program Specialists**

#### Steve Mindish – Senior Electrical Safety Specialist

- 40 + years of industrial electrical experience including electrical distribution lineman, power plant and instrumentation technician, residential and commercial electrical contractor and an electrical/electronic instructor and consultant
- Certified Electrical Inspector
- 20 + years of electrical safety program development & implementation
- 20 + years of electrical trade training and course development
- Former College Adjunct Professor for Electronics
- Expert knowledge of NFPA 70E, NFPA 70B and NEC

#### Von Phillips – Senior Electrical Safety Specialist

- Licensed Master Electrician
- Certified Electrical Inspector
- 25 years + of industrial electrical experience including as an electrician, maintenance supervisor and associate engineer
- 10 + years Electrical Trades Trainer for Community Colleges and Training Companies
- 10 + years of electrical safety and electrical maintenance program development
- Certified infrared thermographer
- Expert knowledge of NFPA 70E, NFPA 70B and NEC

## **Electrical Safety & Arc Flash Hazard Training**

### **INSTRUCTOR-LEAD TRAINING PROGRAM**

#### **Purpose of Training:**

The Electrical Safety and 70E® Arc Flash Protection training course is designed to save lives, prevent disabling injuries, and prevent damage to plants, building and equipment.

Based on NFPA 70E®, students attending this course will gain an immense respect for the power of electricity. They will learn about personal safety for working on or around electrical systems and equipment, how to use proper materials and procedures for doing electrical work - and the potential consequences for themselves or others if they don't.

Taught as if they were our own employees, students are given practical instruction that they can immediately apply when they go back to their workplace. This course also helps companies' meet their OSHA training obligations as outlined in CFR 1910.331-335.



#### **Training Outcomes:**

Attendees will learn to:

1. How to identify electrical hazards
2. The difference between "qualified" and "unqualified" electrical workers
3. Safe approach distances to exposed electrical conductors
4. Improvements in PPE (Personal Protective Equipment) for electrical safety
5. "Hot Work" rules
6. Proper work practices in wet or damp locations containing electricity
7. Lockout/Tagout procedures for electrical equipment and systems
8. Safety requirements for electrical installations
9. Damage caused to equipment from poor electrical safety practices
10. Damage caused to people from poor electrical safety practices
11. Just how much voltage / current is too much for the human body to handle
12. How OSHA Rules apply to your job & workplace
13. What it takes to establish compliance
14. OSHA penalties for noncompliance

## Course Agenda

### **I. Electrical Safety & the Qualified Electrical Worker**

- A. Background, Responsibilities & Requirements
- B. Safety Standard Types: NFPA 70E® & Others
- C. OSHA Electrical Safety Regulations Overview

### **II. Electrical Hazards**

- A. Power of Electricity - Shock, Arc-Flash & Arc-blast
- B. How to identify electrical hazards
- C. Electrical Fires
- D. Electrical Burns
- E. Static Electricity
- F. Accident Prevention
- G. Emergency Response

### **III. Safety Related Work Practices**

- A. Definitions
- B. General Requirements
- C. Establishing Safe Work Condition
- D. Electrical Lockout / Tagout
- E. Working on or near Energized Parts
- F. Safe Approach Distances
- G. Energized Work Permit
- H. Conducting an Arc Flash Analysis
- I. Reading Arc Flash One Line Diagrams
- J. Determining PPE Requirements from the Arc Flash Analysis

### **IV. Safety Related Maintenance Requirements**

- A. General Maintenance Requirements
- B. Substations, Switchgear, Switchboards, Panelboards, Motor Control Centers, Disconnect  
Switches
- C. Premises Wiring
- D. Controller Equipment
- E. Fuses & Circuit Breakers
- F. Rotating Equipment
- G. Hazardous (Classified) Locations
- H. Batteries & Battery Rooms
- I. Portable Electrical Tools & Equipment (PPR)

**V. Safety-Related Work Practices & Requirements for Special Equipment (if applicable)**

- A. Electrolytic Cells
- B. Batteries & Battery Rooms
- C. Lasers
- D. Power Electronic Equipment

**VI. Electrical Safety Program**

- A. Complying with NFPA 70E®
- B. Interpreting Arc Flash Analysis Results
- C. Determining your PPE Requirements

NFPA 70E® and 70E® are registered trademarks of National Fire Protection Association, Quincy MA USA

## About Martin Technical

### About Us



Martin Technical is a provider of practical services for making facilities better, safer and more efficient. Our expert staff combines their real world work experiences of the past with today's technologies and best practices to provide our customers with the solutions and knowledge they need to maximize their operations and keep safe doing it. And because all our experts have in-field experience, we understand the difference between theory and application and are able to translate today's complex problems into simple solutions that can be implemented tomorrow.

### About Our Customers

Our customers represent a broad spectrum, big and small, and we have provided services for virtually every type of company, plant or facility, including:

- Manufacturing Plants
- Schools & Universities
- Data & Service Centers
- Airports
- Government & Military
- Hospitals
- R&D Facilities
- Public Buildings
- Energy & Utility Plants
- Water & Waste Water
- Hotel & Hospitality
- Commercial Buildings

### Liability / Insurance

We carry the following insurance policies:

- General Liability - \$2 Million per occurrence / \$4 Million aggregate policy
- Professional Liability - \$1 Million policy

In addition, any outside engineers used on projects are required to have their own individual professional liability and general liability insurance.

## Products & Services

We specialize in making plants and facilities better, safer and more efficient by providing the following services and products:

### Electrical Studies & Testing

- Arc Flash Analysis & Labeling
- Short Circuit Study
- Protective Device & Coordination Study
- Power Quality Audit
- Motor Load Studies
- Infrared Inspection

### Electrical Safety

- Electrical Safety Program Development
- Electrical Safety Audit
- Electrical Safety Training
- Qualified Person / Electrical Worker Certification
- Lockout / Tagout Programs
- Infrared Inspections

### Energy Management

- Energy Audits
- Boiler, Compressor & HVAC Audits
- Energy Management Training

### Electrical Maintenance Training

- Electrical maintenance training topics are available through our training partners.