

Are Technician Certification Programs a Worthwhile Investment?

Dennis K. Neitzel, CPE

Technician certification programs are necessary to help companies meet OSHA's definition of a "qualified" person. The attainment of a technician certification also provides the employee with a means to indicate to employers and co-workers that they are qualified. It also gives the employee a sense of pride and accomplishment, since it reflects professional achievement in a chosen field. Certification can also offer greater opportunities for advancement.

Additional benefits would include, but not be limited to, the following:

- Indicates qualification to perform specific types of electrical maintenance and testing.
- Professionally differentiates individual from other job candidates.
- Verifies qualification in compliance with OSHA regulations 29 CFR 1910.269 and .331 -.335.
- Offers a value-added advantage to testing companies during the project bidding process.
- Reflects positively on an organization's commitment to skill development and quality performance.

Training electrical maintenance employees to be qualified at the certification level is vital to providing a safe and efficient work force, as well as to the reliability and integrity of electrical systems and equipment, in fact OSHA requires technicians to be "qualified" before they are allowed to work on electrical equipment. Qualified persons are particularly important in the electrical industry for performing maintenance, testing, troubleshooting, repairs, installations, as well as other activities that require a high level of expertise. Electrical shock, electrocution, and electrical arc flash can happen without notice and if personnel who are operating, performing maintenance, or testing on the circuits or equipment are not trained, qualified, and prepared for these potential hazards, the outcome can be disastrous. According to OSHA 29 CFR 1910.269(a)(2)(vii) the employer cannot certify that an employee has received the required training until that employee has "demonstrated proficiency" in the work practices involved. An understanding of the "work practices involved" is required in order to determine the qualifications of individual employees.

Since qualification is so important and OSHA demands that employees be qualified, the term "qualified person" must be defined. OSHA 1910.399 provides the definition of a "Qualified Person" as follows:

"Qualified person" – 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.

Note 1 to the definition of "qualified person:" Whether an employee is considered to be a "qualified person" will depend upon various circumstances in the workplace. For example, it is possible and, in fact, likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment. (See 1910.332(b)(3) for training requirements that specifically apply to qualified persons.)

Note 2 to the definition of "qualified person:" An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties."

In order to determine whether or not an employee is qualified requires a needs assessment to be conducted along with a job/task analysis and a task hazard analysis. This article addresses several key components needed in order to develop a comprehensive training program that will help to

qualify electrical maintenance employees. A thorough understanding of the requirements for a qualified person will be of great benefit in the development of an effective training program or determining appropriate external training programs.

We must first look at the OSHA minimum requirements that a qualified person must be trained in. This training must consist of either classroom or on-the-job, or a combination of the two. The most effective training consists of three parts; 1) Training Needs Assessment, 2) Job/Task Analysis, and 3) Task Hazard Analysis. From OSHA 29 CFR 1910.332 we derive the following requirements for qualified employees to be trained and competent in:

- Skills and techniques necessary to distinguish live parts from other parts
- Skills and techniques necessary to determine the nominal voltage
- Minimum approach distances to live parts
- The proper use of:
 - Special precautionary techniques
 - Insulating and shielding materials
 - Insulated tools and test equipment
 - Job planning

Additionally OSHA states that a person must have this training in order to be considered a qualified person. They also require the employer, through regular supervision and annual inspections, to verify that employees are complying with the safety-related work practices.

Additional training or retraining may also be required if:

- The supervision or annual inspections indicate non-compliance with work practices
- New technology
- New types of equipment
- Changes in procedures
- Employee is required to use work practices that they normally do not use

Another consideration for retraining is a statement made by OSHA in 1910.269 and is restated in NFPA 70E, 110.6(D)(1)(d); "OSHA would consider tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved."

Technician certification programs generally start with a thorough evaluation of the job, the tasks that make up the job, and the hazard associated with each task. The following procedure will help to identify the content of the technician certification program and thus the qualification of employees.

1) Training Needs Assessment

As noted above, a training needs assessment must be performed before any significant training can be developed and implemented. This assessment involves relevant company personnel who are aware of the job requirements and all applicable codes, standards, and regulations. Information collected will provide insights into any past or present performance problems that must be addressed in the training program. This process can also be used to determine whether or not training is the solution to any problems that may exist. Other factors, which affect performance, must also be recognized and considered. These other factors could include the quality of procedures, human factors, management style, and work environment. Any one or all of these factors may affect job performance.

The needs assessment should include, but not be limited to, an in-depth review of the following:

- Standard Operating Procedures (SOP)
- Department Procedures
- Technical Specifications/Standards
- Job Questionnaires
- Organization Charts
- Operating Logs
- Qualification Standards
- Unusual Occurrence Reports (UOR)

Review of these documents has a twofold purpose: 1) It enables the evaluator to learn about the general nature of the jobs being assessed, and 2) It tells the evaluator how much of the analysis has already been done.

The information collected during the needs assessment will provide the starting point for the job/task and hazard analysis and ultimately the design, development, implementation, and evaluation of the training program that meets the specific needs of a company.

2) Job/Task Analysis

A review of the information collected during the needs assessment will help to write the initial job description. The description should contain the following components:

- Job title
- Qualification requirements for the job
- General description of job requirements
- Description of the job position within the organization, including lines of supervision and assistance available to the employee.
- Description of job environment
- Listing of tools and equipment used in the job
- Listing of resource documents and references used in the job
- Inventory of tasks

The most difficult part of the job description to develop is the task inventory, which is a listing of all tasks that make up the job. A task is defined as an observable, measurable unit of work which has a definite beginning and end. A task can be performed in a relatively short period of time (i.e., minutes, hours, or days), and is independent of other actions. Tasks themselves are made up of discrete, manageable steps, or elements. The elements may or may not require sequential performance.

When organizing task lists, the evaluator may sometimes find it helpful to categorize groups of tasks into duty areas. For example, a facility electrician may have duties in electrical utilization equipment and systems, power generation, distribution equipment and systems, and substation maintenance and testing. All of the duty areas and tasks performed by a single worker comprise a job. A facility electrician is an example of a job.

3) Task Hazard Analysis

A task hazard analysis can provide a great deal of information and direction toward reducing accidents and injuries in the workplace, but it is only effective if it is reviewed and updated periodically. The frequency of review and update will vary from weeks, months, or even years.

OSHA identifies several areas to be considered that would require review and update; new technology, new types of equipment, or changes in procedures. Even if no changes have been made in a task, hazards that were missed in an earlier analysis could be detected. It is recommended that at least an annual basic review be conducted; in fact, OSHA requires several annual reviews such as for energy control procedures and for work on electric power generation, transmission, and distribution lines and equipment.

The following are the recommended steps for conducting a Task Hazard Analysis:

- Select tasks for analysis and prioritize them by hazardous conditions and frequency performed.
- Before beginning the task hazard analysis, look at the general conditions under which the task is to be performed and develop a checklist.
- Most tasks can be broken down into steps.
- After you have recorded the task steps, examine each step to determine the hazards that exist or that might occur.
- Determine the probable cause of the hazards.
- Recommend safety procedures and personal protective equipment (PPE).
- Revise the Job/Task Analysis as necessary based on the hazards identified.

Performing a task hazard analysis is not an option. OSHA 29 CFR 1910.132(d)(1) requires that *“The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE).”*

In addition to the OSHA requirement for a hazard assessment, the NFPA 70E requires a “Shock Hazard Analysis” and a “Flash Hazard Analysis” to be performed. These analyses are used to determine the level of the electrical energy and to identify and establish the shock and arc flash protection boundaries. The results of each analysis are also used to properly select the required personal protective equipment (PPE) for employees who may be exposed to the hazards.

In addition to these assessments, OSHA also requires, under 1910.132(f)(1), that: *“The employer shall provide training to each employee who is required by this section to use PPE.”*

Any time a job/task or task hazard analysis is revised, training in the new job methods or protective measures must be provided to all employees affected by the changes. A job/task and task hazard analysis can also be used to train new employees on the job requirements, task steps, and task hazards.

4) Technician Certification (“Qualified Person”)

OSHA has provided the industry with mandated requirements for the training and qualification of employees. Besides OSHA mandates, there are also many other benefits to having well trained and qualified employees; 1) the major benefits expressed by industry is the reduction of unscheduled down time; and 2) another major benefit is the safety of each of their employees. The more extensive the training program the better qualified the employee. It has been proven that the most effective training programs include a combination of lecture and hands-on instruction.

Summary

Effective technician certification programs follow this method of developing “qualified person” training programs

Electrical power systems and equipment are often very complex. Circuit protective devices, controls, instrumentation, and interlock systems demand that technicians be trained and qualified at a high technical skill level. Safety and operating procedures utilized in working on or operating these systems are equally as complex requiring technicians to be expertly trained in all safety practices and procedures. The goal of any Technician Certification Program is to develop and maintain an effective and safe work force by utilizing “qualified” employees to perform this work.

OSHA regulations require employers to document that employees have demonstrated proficiency in electrical tasks. Employers must “certify” that their employees are qualified and that this certification is maintained for the duration of the employee’s employment. OSHA’s intent here is to ensure that the training is well documented. By far the best way to demonstrate to OSHA that the training and qualification meets their intent is to utilize an industry recognized Technician Certification Program.

Dennis K. Neitzel, CPE, Director, AVO Training Institute, Inc., 4271 Bronze Way, Dallas, Texas 75237, 1-877-594-3156, ext. 7315, dennis.neitzel@avotraining.com, <http://www.avotraining.com>.