

Where Do They Fit In?

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Creating an Electrical Safety Program can be a complicated endeavor. It can be confusing when you try to include all the different aspects that should be addressed: FR (fire resistant) clothing, insulated tools, training, hazard analysis, etc.

Trying to pick one part at a time seems to be the best approach in an effort to create budgets and address the specific needs of your company/facility. For many, the hardest part is simply deciding what part to address first. Ironically; the best first-step is the most important AND the least expensive.

This first step involves a self-audit of your employees to determine “where they fit in.” Simply put, what levels of exposure to electrical hazards do each employees have and what level of “qualified” are they with respect to their level of exposure.

Let’s start with the definition of a “Qualified Person.” NFPA 70E 2009 edition, Art. 100 define it as: “One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.”

This definition is all encompassing and far too vague. We need to look at the different groups of employees and what hazards they are exposed to in order to not only place them properly, but to also prepare them properly. All companies no matter what their business could have the same three groups of qualified persons. It is vital to understand what qualities and qualification are synonymous with each group.

Qualified (Authorized) Group

This group would represent your top of the line, most technically skilled employees, and in many cases, your subcontractors whom are hired to do the more involved electrical work. These individuals would have the highest exposure to energized electrical equipment and be in need of comprehensive training curriculum and skill sets.

The NPFA 70E 2009 lays out a detailed list of requirements for those individual that are at the highest level of exposure. Under Article 110.6(D), entitled Employee Training, it says:

(1) Qualified Person. *A qualified person shall be trained and knowledgeable of the construction and operation of equipment or a specific work method and be trained to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method.*

(a) Such persons shall also be familiar with the proper use of the special precautionary techniques, personal protective equipment, including arc-flash, insulating and shielding materials, and insulated tools and test equipment. A person can be considered qualified with respect to certain equipment and methods but still be unqualified for others.

(b) Such persons permitted to work within the Limited Approach Boundary of exposed energized electrical conductors and circuit parts operating at 50 volts or more shall, at a minimum, be additionally trained in all of the following:

- (1) The skills and techniques necessary to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment*
- (2) The skills and techniques necessary to determine the nominal voltage of exposed energized electrical conductors and circuit parts*
- (3) The approach distances specified in **Table 130.2(C)** and the corresponding voltages to which the qualified person will be exposed*

- (4) *The decision-making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely*

This can be simplified with a quick “litmus test” as to the exposure for someone expected to be categorized in this group. Individuals who fit this category will be ones who are expected to do the following tasks:

- a. Be asked to use a multi-meter to troubleshoot a problem in an electrical device
- b. Use an approved voltage reading device to do a zero energy check in an effort to create an electrical safe work condition for themselves or for someone else to perform a needed repair or related work.
- c. Any other task that would cause the individual to be exposed to energized or presumed energized parts of an electrical device.

Although that is not a complete list of tasks that would be used to associate some qualified at the top level, it should be fairly easy to whittle down the list of employees who do not qualify for inclusion in this group. However it may create an uncomfortable reality to find maintenance staff or mechanics doing work that is described above who really shouldn't be involved with such dangerous tasks.

Qualified (Task Specific) Group

Those not meeting the requirements for our first group would then be re-evaluated to see if they belong in the less involved “task specific” group. Just as the group name suggests, this group can turn into quite a large number of sub-groups since now we are dealing with very specific needs in training, procedures, protection methods etc. This group can be summarized as any electrical hazard exposure that does not include exposure to energized electrical parts. That would narrow it down to interacting with electrical equipment that is energized or assumed energized, specifically operating a circuit breaker or the handle on a disconnect switch.

This groups primary hazards are *arc flash* and *arc blast*. Examples of someone who might fit into this category could be someone whose primary job function is to be a welder as he'll need to turn off the power to the outlet that feeds their welding equipment. Whether it is a breaker or disconnect, there would still involve training on how to determine the protection from an arc flash that could occur from interacting with a disconnect during the opening/closing of the switch handle and what PPE (personal protective equipment) and other protection (boundaries, tools, etc.) are needed for the task.

A similar task that might be more common would be an employee that works on an assembly or process line who might need to stop the machine for component set-up or changes or minor repairs. This may involve a lock-out tag procedure that might be needed to ensure that movable parts are isolated while the needed repairs etc. are made. Again, our primary hazards are arc flash and arc blast so we still need to train in the awareness and how to determine what PPE and other related safe work practices that would appropriate for the tasks. This could easily turn out to be quite a few specific qualifications and procedures – even for each specific process or assembly piece you have, but in the long run it may prevent hundreds of hours of training not necessarily needed for individuals who only work on a few or even single piece of equipment.

Unqualified Group

The last group would consist of all the remaining employees that you have or that you hire to come into your facility. Regardless of whether it is the custodian, painter, manager, secretary or engineer not listed in the first two groups... anyone not skilled, trained, or equipped to do any of the tasks we have discussed so far (operate a switch, breaker, etc. or be exposed to energized or presumed energized parts).

The most difficult part of identifying this group to determine which of your employees is actually interacting with electrical equipment and why? This would include anyone in an office who might simply be operating a breaker in a 120v lighting panel.

Once you have determined who is interacting with electrical equipment, determine if the scope of their job actually requires for the operation of a disconnect or breaker. If there is no real need for their involvement with the device - don't let them interact with it anymore.

If in fact the device is required to turn it on or off; then you are really looking at two options:

1. Provide the individuals involved with the proper training, PPE and other necessary procedures to protect themselves when operating device.
2. If it is not a frequently performed task, confirm to them their status as a non-qualified person and instruct them on when to get a more qualified individual who is designated to operate the device and make it electrically safe before they are permitted to perform any tasks needed.

Determining how often the device needs to be opened (daily, weekly, monthly, etc.) will help to determine if it is more cost effective to get someone more qualified involved or to engage in training and securing protective equipment for a larger group of individuals.

By completing a self audit of your employees and determining what group they fit into (Qualified-Authorized, Qualified-Task specific, or Unqualified) it will enable you to more accurately and more efficiently address the best course of action when creating or updating your electrical safety program and not waste extra money on excessive training, PPE and procedural involvement of employees who might really not be needing it nor who should be exposed to the danger in the first place.

Stark Safety Consultants specializes in Arc flash hazard analysis and electrical safe work practices training as well as related consulting services to aid in the creation and updating of electrical safety policies. Stark Safety Consultants is a proud National Training Partner of the National Joint Apprenticeship Committee (NJATC). WWW.StarkSafetyConsultants.com