

WHAT YOU NEED TO KNOW

A PowerHawke Informational Series
Electrical Safety Services

Arc Flash

An arc flash incident results from electrical tasks being conducted without proper precautions. The flash itself is a “fireball” that can permanently disable or disfigure an individual in a fraction of a second, and can even kill. You can avoid an arc flash incident in your facility by establishing company policies that mandate proper and safe electrical procedures.

SEVEN THINGS YOU NEED TO KNOW ABOUT ARC FLASH

1. Work de-energized.



It is the only way to truly eliminate arc flash risk and damage. Adopt an enterprise-wide “No-Hot-Work” policy meaning: Work de-energized. Period. You are still required to complete an arc flash hazard analysis to satisfy NFPA 70E, but working de-energized is the most straightforward way of dealing with the actual risk of arc flash.

Three key action steps to make this policy work for your organization:

- Upgrade your electrical safety policy, procedures and requirements;
- Educate your workforce and contractors;
- Implement a strategy for planned outages to allow de-energized work.

2. Looks are always deceiving.

You can never tell if something is bad by just looking at it. Arc flash hazard analysis results over the past several years have proven it is impossible to detect safe from dangerous electrical boxes merely by visual inspection or age.



Although this looks dangerous, the actual hazard is low



Clean and organized but an extreme hazard is lurking

Rules of thumb include:

- Old and dirty is not always worse than new and updated;
- Higher voltages are not necessarily worse than lower voltages;
- Systems over 50V have to be assessed;
- Shock hazards are also included in NFPA 70E and are not always evident.

- Note: An arc flash hazard Category 3 or Category 4 is not uncommon on low voltage systems due to the clearing time of the protective devices.

3. Safety is 100% your responsibility.

OSHA's General Duty Clause squarely puts the clear onus on you, the employer, to provide a work place free of known hazards – arc flash included. The best way to keep everyone safe – your people and your contractors – is to work de-energized. Keep in mind, you cannot transfer risk to a contractor or outsourced supplier. Safety starts and ends with you.

Your responsibilities include:

- Educating your employees and contractors regarding your electrical safety policies;
- Providing proper Personal Protective Equipment (PPE) or requiring that contractors have and use it;
- Completing an arc flash hazard assessment to identify risks in your electrical system and mitigate those systemic risks – some at a very low cost;
- Properly labeling all equipment with, at the very least, a generic arc flash label prior to a full arc flash hazard analysis.

OSHA GENERAL DUTY CLAUSE

Each employer –

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

29 USC 654

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.



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4. Accountability is different than responsibility.

When it comes to safety, again, the responsibility sits directly on you. However, OSHA clearly states that your employees and contractors are required to follow your rules, programs and procedures when it comes to safety. And, carried one step further, your contractors can and should be held accountable for following your procedures, or at the very least, following industry standard practices. They are accountable to do all they can to keep themselves safe, and your risk low.

How to ensure compliance:

- Educate employees and contractors as to their role and degree of accountability;
- Require your contractors provide tangible proof that they are qualified and working safe;
- Create and strictly enforce a “No Excuses” Zero Tolerance policy.

5. Safety goes beyond the law.

The truth is, there are no laws regarding arc flash safety. However, that doesn't matter. OSHA will use NFPA 70E as the yardstick to determine if you are negligent in the event of an accident. It's not defensible, and to hide behind the idea that it's not law is unconscionable and morally wrong because injuries due to this risk are horrific, and completely preventable.

The harsh reality includes:

- Financial and medical results are easily in the seven-figure range, see table below;

COSTS YOU SHOULD NEVER INCUR:

The total costs of a single arc flash accident have been estimated to be \$12 - \$15 million, which includes:

- Medical Expenses (Note: the average cost of the medical treatment alone for one survivor of an arc flash incident is \$1.5 million)
- Lost productivity of worker
- Equipment / Facility down time
- Equipment replacement
- Insurance complications
- Fines and Fees
- Litigation

OSHA fines can reach or exceed \$400K alone for not being compliant with electrical safety regulations, but the bigger cost in this is the 3rd party lawsuits if the employer did not properly identify the hazards and warn the workers about them / provide proper PPE / train the workers. Recently building and business owners have personally been found as negligent in some electrical accidents.

- Fines, bad PR, your organization's reputation as well as your personal reputation are at stake;
- The human tragedy is staggering, life changing and sometimes not survivable.

6. Know your level of risk.

An arc flash hazard assessment will analyze the condition of your electrical equipment and pinpoint areas of and levels of risk. The process includes an extensive site visit to verify and develop a computer model that is analyzed by an engineer. The results are reviewed with you, and a strategy for mitigation can then be created. After that, a written report documents the condition and your associated risk, and labels are installed on each piece of equipment.

Remember:

- Only qualified individuals should open energized equipment to discover information and details;
- A licensed engineer should review the model and assessment;
- Training is provided to you and your staff using the results of your assessment.

7. You can't put a cost on human life.

The investment in an arc flash hazard assessment is largely driven by the field work required to visit and catalog every device into a working model. The size, complexity and how physically spread out an electrical system is constitutes a big portion of the work. Typically, simple buildings can run in the \$5,000 - \$10,000 range and multi-site, multi building campuses can run into the six-figure range.

In addition to the actual assessment, you will also want to consider:

- Ongoing preventive electrical maintenance must be integrated into your risk mitigation plan;
- 'Qualified Individuals' require training on a regular basis;
- Updating the arc flash hazard analysis when and if a major upgrade occurs, or at least every 5 years.

REMEMBER... an arc flash assessment and risk mitigation strategies are investments in your organization, your reputation and the prevention of catastrophic damage, suffering and loss. What's at stake could be a human life. And there's no price for that.