

Arc Flash: Preventing Devastation

Great Cost

Many workers, contractors and companies are severely impacted by arc flash every year. In the United States, there is an average of 254 fatal electrical injuries annually. Eighty percent of electrical-related injuries and fatalities involving qualified workers are caused by arc flash. One arc flash victim's medical care can exceed one million dollars. If there is an arc flash incident, OSHA could fine your company up to \$500,000 per facility. These figures don't include expensive downtime and repairs required to regain equipment and facility operation.



OSHA, Codes and Standards

Many companies are not in compliance with the more stringent NFPA 70E 2015 standards. Even companies that have implemented prevention measures may not pass an OSHA arc flash audit. NEC and NFPA 70E 2015 standards require an arc flash risk assessment every five years or after a major modification or renovation. An updated risk assessment accounts for changes in the electrical distribution system.

Cause and Effect

An electric arc flash results from intense heat, up to 35,000°F (19,426°C), generated from an electrical short circuit. This short circuit can be triggered by dust, equipment failure, corrosion or fluids, as well as accidental electrical component contact with a non-insulated tool, wire, rodent or other conductive item. The result is devastating personal injury, sometimes death, and significant property damage.

Arc flash:

- Vaporizes copper or aluminum conductors
- Burns non-fire retardant clothing onto skin
- Spreads fire rapidly throughout a building
- Creates blast pressure upwards of 2,000 pounds per square foot (907 kg per 0.09 square m)
- Produces flying debris, such as molten metal
- Generates blast sound up to 140 dB (as loud as a gunshot)

Prevention

Avoiding the devastation of an arc flash incident begins with a comprehensive arc flash risk assessment. While most companies take safety very seriously, many have outdated arc flash risk assessments. Some businesses have only completed a partial risk assessment, or have overlooked the need entirely. Others may assume that similar equipment added since an arc flash risk assessment will have the same rating. However, other factors need to be considered, such as length of wiring from other equipment.

Risk Assessment

An arc flash risk assessment is performed by a qualified engineering company. The process includes a survey and data collection of existing or new electrical systems, such as electrical switchboards, panelboards, industrial-control panels and other equipment. This data is used to perform short-circuit and arc flash analyses. It is also used to determine approach boundaries and the PPE (personal protective equipment) category level of each area.



Warning Labels

Even experienced electricians may not be aware of the level of hazard present without proper warning labels. Electrical equipment must be field-marked with a warning label if subject to examination, adjustment, service or maintenance while energized. Arc flash warning labels with accurate PPE requirements minimize:

- The potential for worker injury or fatality
- Expensive downtime and equipment damage
- The chance of a large fine from OSHA
- The risk of a personal-injury lawsuit



Additional Prevention

Training and maintenance are very critical considerations for preventing arc flash. Inadequate maintenance can cause unintentional delays in the clearing of a short-circuit condition. Employers are also required to provide safety education to equipment operators, maintenance professionals and electricians—all employees who are exposed to electrical hazards.

Get Started

ecs, a division of Parsons, is available to help prevent and protect you against arc flash. With more than 90 years of electrical experience, the company has an industry-leading safety record. ecs provides risk assessment, NFPA-compliant labels and training to help companies prevent arc flash.

In addition, ecs provides distribution centers with reliable 24/7, one-source electrical and fire and services. ecs has highly trained, nationwide teams with advanced technology delivering improved uptime, safety and peace of mind.

For additional information on arc flash and other services provided by ecs, visit www.e-c-s.com. To request a quote for an arc flash risk assessment, call +1 763.571.1126 or email admin@e-c-s.com.