



# WHAT IS ARC FLASH?





# **What you don't know can jump out and hurt you!**

## Arc Flash Labeling

With the increasing need for power to be consistent and uninterrupted, servicing and troubleshooting live equipment has become more prevalent. As a result, over 2,000 workers a year (5 per day) are injured in live electrical accidents. Eighty percent of all electrical injuries are burns related to arc flash. The National Fire Protection Association (NFPA) set forth a standard for labeling serviceable electrical equipment with the potential arc flash hazard and the required personal protective equipment (PPE)

### **Do you remember the sunburn you got on the beach at 85 degrees?**

Imagine an arc flash traveling towards you at 700 miles per hour with hot gas and fragmented metal at 35,000 degrees (4x's the temperature of the sun's surface). This is a result of a short circuit between phases, or from live conductors contacting ground. This can be caused simply by a loose screw or dropped tool. Most fatalities are caused by 3<sup>rd</sup> degree burns and collapsed lungs caused by the percussion.

### **Wouldn't a 480 volt panel be more dangerous than a 120 volt panel?**

Not necessarily. The misnomer is, the higher the voltage or amperage the more dangerous the equipment. In actuality, there are many other contributing factors that can cause a 120 volt panel to have a higher arc flash danger, such as the interrupting capacity of the fuse or breaker feeding the panel. In laymen's terms, how fast will it turn off when a screwdriver inadvertently falls into the equipment.

### **Can generic warning stickers be put on all equipment?**

In order to properly label electrical panels and equipment, NFPA70E guidelines require the following steps:

- A data collection survey of the building must be performed starting at the utility transformer. All electrical equipment, such as the main distribution panel, conduit and wire sizes and distance to each location, are measured and recorded.
- The data is analyzed and calculations are performed to determine the arc flash potential at all serviceable points in the distribution system.
- Labels are generated for each specific location illustrating the nominal system voltage, arc flash boundary and site-specific PPE requirements.

- Building engineers and service personnel must be trained to understand what level of PPE is required based on the available fault current dictated by the engineered labeling.
- The bonus to having this safety program performed is that a line diagram is generated illustrating the size, location and specifications of every fuse, breaker and panel. This is also known as an as-built drawing and it can be used to stock replacement fuses or acquire a replacement breaker in an emergency.

### **What is the potential cost of not complying?**

A report by Mission Critical shows that an arc flash related accident incurs an average cost of \$750,000.00. The National Safety Counsel estimates that these types of injuries cost businesses well over \$30 million a year in fines, medical costs and litigation. Between 2007 and 2011 OSHA assessed 2,880 fines for failure to meet 1910.132(2) standards.

The old adage is an ounce of prevention is worth a pound of cure. In this instance, a sticker can save a life.

Joseph Spinella  
Master Electrician #9468



**215 Speedwell Avenue**  
**Morristown, NJ 07960**  
**Voice 973-993-1599**  
**Fax 973-993-9823**

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