



## Why the Focus on Arc Flash?

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Arc flash incidents in the U.S. cause more than 30,000 injuries every year with about 3% of these resulting in death. Arc flash is a growing source of concern for manufacturers and other employers, and OSHA has begun citing companies for arc flash violations. Arc Flash is the result of a rapid release of energy due to an arcing fault between a phase bus bar and another phase bus bar, neutral or a ground. Arc flash can be caused by deteriorating insulation, corroded or improperly maintained electrical equipment, or simply dropping tools while working on energized equipment. It most often occurs when removing panels, opening electrical doors, racking or servicing breakers, or during troubleshooting operations.

Four separate industry standards are concerned with the prevention of arc flash incidents. They are IEEE Standard 1584-2002, OSHA 29 CFR 1910.910, the NEC 2002, and NFPA70E-2000. The NFPA70E Standard for Electrical Requirements in the Workplace governs the energy calculations and determination of explosive hazards and establishes the requirements for the practical safeguarding of personnel during daily activities.

So how do we protect workers from arc flash? The potential hazards must first be identified and evaluated. To perform the analysis data must be collected. This data includes the arrangement of components on a one-line drawing with nameplate specifications of every device. A short circuit analysis follows and the resultant data will be used to establish Hazard Risk Categories and safety boundaries for all electrical equipment.

The calculations will be used to label all electrical equipment with approved labels. Switchboards, panel boards, industrial control panels, and motor control centers must be field marked with the arc flash category and safe boundary information. Any equipment installed after 2002 needs to be labeled. For equipment installed prior to 2002, labeling must be applied if ANY modifications or upgrades take place.

Next, a comprehensive safety program should be put in place. The labeling on each piece of electrical equipment will instruct the worker on the proper personal protection equipment (PPE) to use. The workers also must understand the proper lockout/tagout requirements that are mandated by their employer and OSHA. Workers should also understand the proper tools for the job, and the proper clothing to wear.

Now that the hazards associated with arc flash have been established, the problem is to try to eliminate, or at least reduce, those hazards. The most effective way to protect personnel who are working on exposed conductors is to de-energize circuits. When that is not practical, reducing the hazard by design is a good option. One option would include using Low-Peak<sup>®</sup> fuses to limit incident energy. Another choice would be to use door mounted external connection ports for monitoring or changing settings on equipment inside an enclosure. Providing an interlocked disconnecting means outside the enclosure would also limit the exposure to hazard. When the worker must work on live parts the correct PPE and tools for the job must be used.

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