



# ARC FLASH HAZARD ANALYSIS

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**Arc flashes** are explosions of light and heat that happen when electric currents jump from one conductor and connect to the air, ground, or another conductor. The arc flash energy that is released onto the receiving surface is called Incident Energy, measured by both the energy (calories) and the distance between both conductors (cm<sup>2</sup>.) Incident energy produced by arc flashes varies greatly and may result in minor burns, while more severe incidents can cause second-degree burns, and in many cases, even death.

**Arc flash mitigation** focuses on lowering the actual hazard instead of taking steps to reduce risks. Mitigation efforts emphasize reducing the incident energy of the conductor, rather than relying solely on strategies such as PPE, hazard labels, or safety training. Arc flash mitigation may include the use of:

- De-energized electrical equipment
- remote racking devices
- Specialized breakers that reduce arc flash
- Vacuum Fault Interrupters in transformers



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**Arc flash studies** are integral to mitigation and may mean the difference between a manageable burn or death for workers. These studies provide a comprehensive evaluation of any existing electrical systems and new additions, as well as an arc flash incident energy analysis per current guidelines. Mid-South Engineering is pleased to offer this service as a means for companies to ensure their staff is well-protected and well-cared for.

## A more detailed look at arc flashes

Safety hazards inherently exist within electrical systems involving accidental contact with energized or “live” equipment. The NEC (National Electrical Code, NFPA 70) mandates a minimum working space around electrical equipment to provide an adequate area for safe examination, service, and maintenance.

Electricians have been seriously injured by electrical arc flash burns while working on energized electrical equipment. Burns caused by an arc flash that lasts only a second can be severe due to the extreme temperatures, which can reach 35,000 Deg. F. The arc flash can produce extensive first-degree burns, permanent blindness, and death. The explosion associated with arc flash can cause shrapnel to pierce the worker’s body.

An arc flash hazard analysis is required before a qualified person can approach any exposed electrical conductor or circuit part that has not been placed in an electrically safe work condition. One of the important requirements is the determination of a flash protection boundary. A Flash Protection Boundary establishes an approach limit at a distance from exposed live parts within which a person could receive a second-degree burn if an electrical arc flash occurred. The protection boundary cannot be crossed without wearing appropriate Flame Resistant (FR) clothing and Personal Protective Equipment (PPE).