WHAT IS AN ARC FLASH?
An arc flash is an electrical explosion resulting in electrical energy traveling through the air to ground or to a point of lower potential. At the arc terminals, temperatures of an explosion can exceed 35,000°F (19,400°C).
The immense electrical energy vaporizes metal. The change from solid state to gas vapor produces an explosive force. The results of these explosive events can cause the destruction of equipment, intense heat, fire, thermoacoustic shock waves, molten metal, shrapnel, blinding light, and toxic smoke. Arc flash events are often fatal.

BENEFITS OF AN ARC FLASH ANALYSIS
• Improve Employee Safety
• Improve Power System Reliability
• Provide Updated One-Line Diagrams
• Provide Detection of Underrated Electrical Equipment
• Determine Major NEC violations in the Electrical System
• Reduce Nuisance Tripping

IDENTIFY HAZARDS AND CONDUCT AN ARC FLASH ANALYSIS
An arc flash analysis is a safety evaluation intended to physically identify and mitigate the inherent hazards that exist within an electrical distribution system in facilities of all types. Hawthorne Power Systems’ team of Advanced Electrical Services Solutions experts will perform a 12-Step Arc Flash Analysis & Hazard Identification Compliance Process, including short circuit and coordination studies, to help you prevent arc flash hazards.

ARE YOU IN COMPLIANCE?
Electrical injuries and fatalities occur at an alarming rate. Not all employers adhere or enforce safety guidelines as prescribed by the National Fire Protection Agency (NFPA®) and the Occupational Safety and Health Administration (OSHA®). Proper employee training is needed to ensure workers’ safety and protection from potential lawsuits.
The Bureau of Labor Statistics indicates that up to 80% of reported electrical injuries are caused by electrical arc flash events. These results emphasize the importance of compliance for employers and why an arc flash analysis must be performed before an employee approaches an exposed electrical conductor.

ASSOCIATED COSTS WITH ARC FLASH EVENTS
• Lost Productivity
• Workers Compensation
• Increased Insurance Premiums
• Facility and Equipment Damage
• Legal Expense
• OSHA Fines and Penalties

SCHEDULE AN APPOINTMENT TODAY
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The Institute of Electrical and Electronics Engineers (IEEE) has developed the “Standard 1584-Guide for Arc Flash Hazard Calculations”, which the NFPA accepts and these standards are used to develop the analysis.

NFPA 70:
The National Electric Code®

The NEC® has been adopted in all fifty states; it is enforced by various authorities including OSHA®.

NFPA 70E:
Standard for Electrical Safety in the Workplace

NFPA 70E addresses workplace electrical safety standards, emphasizing the implementation of practical safeguards for the protection of employees. Various Arc Flash specifics found within NFPA 70E as a guide to determine if an employer has acted properly during the investigation.

| 29CFR1910.132 | Requires employers to perform a personal protective equipment (PPE) hazard assessment to determine the necessary PPE. |
| 29CFR1910.269 | Requires employers ensure each employee exposed to the hazards of flames or electric arcs do not wear clothing that could increase the extent of injury when exposed to such a hazard. |
| 29CFR1910.332 | Employees shall be trained in and familiar with the safety related work practices. |
| 29CFR1910.333 | A qualified person shall test the circuit elements and electrical parts and verify that the circuit elements to which employees will be exposed are de-energized. |
| 29CFR1910.335 | Employees working in areas where there are potential electrical hazards shall use appropriate electrical protective equipment. |

Note: The above NFPA & OSHA guidelines are for informational purposes only.

Hawthorne Power Systems will also customize arc flash equipment labels with safety recommendations for each identified device. Each label will visually identify the presence of an arc flash risk, recommend safe distances for an arc flash boundary, and clearly provide the level of Personal Protective Equipment (PPE) required.

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Occupational Safety and Health Administration (OSHA®)

OSHA is the Authority Having Jurisdiction (AHJ) which enforces standards and investigates for negligence or oversight related to any arc flash incident. They utilize National Fire Protection Agency (NFPA) standards. NFPA 70E gives guidelines for arc flash analysis hazards. If an incident occurs OSHA will enforce compliance and cite the use of NFPA 70E as a guide to determine if an employer has acted properly during the investigation.

National Fire Protection Agency (NFPA®)

The Institute of Electrical and Electronics Engineers (IEEE) has developed the “Standard 1584-Guide for Arc Flash Hazard Calculations”, which the NFPA accepts and these standards are used to develop the analysis.

29CFR1910.132

29CFR1910.269

29CFR1910.332

29CFR1910.333

29CFR1910.335

NFPA 70E: Standard for Electrical Safety in the Workplace

NFPA 70E addresses workplace electrical safety standards, emphasizing the implementation of practical safeguards for the protection of employees. Various Arc Flash specifics found within NFPA 70E:

130.2 — Energized electrical conductors and circuit parts shall be put into an electrically safe work condition before an employee performs work if any of the following conditions exist:
- The employee is within the limited approach boundary.
- The employee interacts with equipment where conductors or circuit parts are not exposed but an increased likelihood of injury from an exposure to an arc flash.
- Unless the employer can demonstrate that de-energizing introduces additional hazards or is infeasible.
- Interruption of life support systems, deactivations of emergency alarm systems, or shutdown of hazardous location ventilation systems, energized maintenance (Infrared Testing), and circuits and conductors that operate at less than 50 volts.

130.5 — Requires the arc flash risk assessment be performed where voltage is greater than 50 volts.

130.5(D) — Equipment labels must now include the nominal system voltage, arc flash, boundary, available incident energy and the corresponding working distance, minimum arc rating of clothing, site-specific level of PPE.