

ARC FLASH STUDY AND MITIGATION SERVICES

OUR SOLUTIONS

Because of the explosive nature of equipment failures, serious burn injuries in the electrical industry are of great concern. Detailed investigation into arc flash incidents has led the National Fire Protection Association (NFPA) to adopt arc flash guidelines (NFPA-70E) for work on or near energized electrical equipment. Arc flash studies help ensure employee safety against dangers associated with the release of energy caused by an electrical arc, ensure compliance with industry safety standards, and provide required device labeling to communicate proper levels of Personal Protective Equipment (PPE) and safe approach/working distances.

! WARNING		
Arc Flash and Shock Hazard		
<u>ARC FLASH PROTECTION</u>		<u>SHOCK PROTECTION</u>
Incident Energy (IE) at Working Distance of	37.18 cal/cm² 36 inches	Shock Hazard when cover is removed 4160 VAC
Arc Flash Boundary	8.3 feet	Limited Approach 5 feet
PPE: Minimum Arc Rating (AR) ≥ Incident Energy (IE) AR Long-sleeve Shirt & AR Pant or AR Coverall and/or AR AR Flash Suit Hood, Arc-rated Gloves Hard Hat, Safety Glasses/Goggles, Hearing Protection Leather Footwear		Restricted Approach 2.2 feet
		PPE: Insulating Glove Class 1
		V-Rating 7500 VAC
EQUIPMENT ID: Bus IE 12-40		Label #: 19 Date: 12/14

EN Consulting, a sector of ENTRUST Solutions Group, has extensive experience in arc flash analysis within industrial, utility generation, and commercial environments, including refineries, heavy and light oil terminals, utility generation facilities, recreational buildings, convenient stores, large production facilities, and chemical production facilities. Our highly qualified and licensed professional engineers provide technically compliant arc flash reports, arc flash equipment labels, electrical hazard training, and arc flash mitigation services to help eliminate hazards.

IMPORTANT CONSIDERATIONS

- Has an arc flash study been performed at your facility in the last 5 years?
- Does your electrical equipment have arc flash labels that comply with the latest NFPA 70E requirements?
- Have you made changes to your electrical distribution system since the last arc flash study was performed?
- Have your electricians received safety training to identify electrical hazards and reduce the associated risk?

EN CONSULTING ARC FLASH STUDY SERVICES

- Conduct site visits to collect data and build a model of your facility's power system
- Obtain short circuit, transformer, and protective device information
- Create a system model using the latest version of ETAP, SKM, or EasyPower software
- Perform short circuit and equipment duty evaluations to identify underrated electrical equipment
- Perform a protective device coordination study to ensure protective devices will selectively open during a fault condition
- Perform an arc flash hazard study
- Create a report on the findings of the power system studies, provide recommendations, and review with management
- Generate arc flash labels along with a label key

In addition, EN Consulting can perform the following optional services:

- Install arc flash labels
- Conduct Electrical Hazard Training which meets requirements of NFPA-70E-2018 for training qualified employees
- Perform a preventive maintenance evaluation in compliance with NFPA 70E-2018 Section 205.3 and compile maintenance records necessary to meet this requirement



MITIGATION SERVICES

As part of EN Consulting's arc flash study, recommendations will be made to mitigate arc flash hazards. Usually these are areas where the incident energy exceeds 40 cal./cm². Typical recommendations may include adjustment of protective device settings, administrative controls, or the purchase of remote breaker operating mechanisms. EN Consulting design professionals have considerable experience implementing engineered solutions to mitigate arc flash hazards, some of which include:

- Replacement of molded case circuit breakers with adjustable trip units
- Retrofitting power circuit breakers with solid state trip units and maintenance mode (fast trip) devices
- Protective relaying upgrades (zone-selective interlocking, differential relaying, energy-reducing maintenance switching)
- Replacement of existing switchgear with arc resistant switchgear
- Installation of Arc Flash Light Detection Relay systems
- Installation of High Resistance Grounding systems