

ARC FLASH STUDIES

WHAT IS AN ARC FLASH?

Arc Flash is a dangerous situation associated with the explosive release of energy caused by an electrical arc, due to a power system fault. This fault can result from many factors, including dropped tools onto energized parts, accidental contact with energized electrical systems and components, build up of conductive dust, corrosion, improper work procedures or any other actions that short circuit energized parts.

In the event of an arc flash incident, the intense energy from the arc vaporizes the adjacent material that produces a sudden air expansion through the open side of the enclosure toward the maintenance worker. The energy released by the arc is function of voltage of the system, the magnitude of the current and the duration of the arc.

DO YOU NEED AN ARC FLASH HAZARD ANALYSIS?

Arc flash hazard analysis combines the information available from short circuit analysis and protective device coordination to optimize protective device performance. We evaluate the amount of heat released in the event of a fault in the distribution system and determine the minimum PPE required at each piece of equipment.

Standards for electrical safety in the work place require that any fault should be cleared quickly as possible to reduce the duration and magnitude of the heat released by the short circuit currents. We review engineering practices to obtain faster fault clearing times even if that means some compromise in device coordination.

A short circuit analysis must be performed to determine available fault currents and arc flash hazards. By doing this analysis, previous studies have shown that minor revisions in breaker settings or fuse changes can lead to major reductions of arc flash hazards.

Per NFPA 70E Arc Flash Hazard Analysis shall be performed to protect a person from the possibility of being injured by an arc flash. The Flash Hazard Analysis must be performed to determine the appropriate PPE required for personnel working near any exposed electrical conductor or circuit part. In order to determine the appropriate level of PPE required, the available fault current at the energized electrical equipment being serviced must be calculated and the clearing time of the device opening the circuit to the fault reviewed.



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USING THE DEFAULT TABLES VS. DOING A CALCULATED ANALYSIS?

A realistic assessment and calculation can be obtained if performing a proper arc flash analysis, and you can enable your workers with the proper protective safety equipment. The cost of the analysis is a small price to avoid the expenses and lost productivity that may result from over or under specification of PPE that can happen when using default tables of NFPA 70E compared to when an analysis is not performed.

Current Solutions, P.C. provides these studies and recommendations to help improve your overall power system safety. In today's ever changing environment of electrical power distribution equipment and systems, safety and reliability are becoming the focal point of facilities.

FEATURES OF THE ARC FLASH STUDY:

Current Solutions, P.C. engineers will assist you in determining what your facility must do to comply with the National Fire Protection Association guidelines that are being enforced by Occupational Health and Safety Administration (OSHA). The assessment could include:

- Personal Protection Equipment (PPE) category requirements.
- PPE recommendations presented in clear, tabular format.
- Written report of findings and recommendations.
- Labeling recommendations. Optional power equipment labels listing PPE recommendations for attachment to existing enclosures.
- Optional color-coded single line diagram showing PPE recommendations for posting in electrical rooms.
- Potential arc flash incident energy levels.
- Flash protection boundary distances.
- NFPA 70E interpretation and the application of OSHA requirements to your facility.

MAY WANT TO CONSIDER AN ARC FLASH STUDY, WHEN:

- An Arc Flash study has not been performed in the past three years
- Short-Circuit and protective device coordination studies have not been performed in the past five years.
- Changes have occurred to electrical distribution system or electric utility system.
- A safety audit is being required.
- The facility insurance policy is up for renewal.
- Modifications or expansions of electrical distribution system are being considered.



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CURRENT SOLUTIONS P.C. SERVICES:

Current Solutions, P.C. offers arc flash Analysis, to identify appropriate levels of Personal Protective Equipment (PPE) for employees working on electrical equipment. In addition to arc flash analysis, our engineering staff can perform an assessment of your facility's needs for compliance and a review of the overall power system. Our engineers will consult with you and understand your application.

- Short Circuit Analysis & Load Flow Studies.
- Protective Device Coordination Studies.
- Arc Flash Hazard Analysis.
- Training for plant engineering maintenance personnel.
- Construction management of required distribution system modifications to reduce arc flash hazards.
- Equipment commissioning and system start-up.
- Complete electrical documentation or revision of existing documentation for changes (AutoCAD format).
- Labeling of all electrical equipment and panels to comply with OSHA & NFPA-70E.



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FIRM HISTORY

Current Solutions Professional Engineering Estimating and Consulting, P.C was established in 1998, in Westchester County, New York and has a staff of 12 professionals who offer specialized electrical and specialty system, analysis and studies; engineering design; construction cost estimating and construction administration services. (Larger than many M.E.P firms' electrical teams)

Current Solutions, P.C. provides services across the U.S. to:
facility owners and managers, RE developers, architects, contractors, suppliers,
leasing agents, management companies, government agencies and other engineering firms.

WHAT DIFFERENTIATES CURRENT SOLUTIONS, P.C.

Current Solutions, P.C. actively recruits Engineers with practical field experience. With these core competencies we have developed a solid reputation as Engineers who understand.

Our concentration and vision is to continue to build our skill set & provide --- specialized and customized services, focusing on our clients needs for efficient, productive, scalable, secure and dependable infrastructures.

We proactively reduce project costs, meet deadlines and exceed expectations throughout each project phase, Plan through Construction.

We measure our successes through positive client feedback, repeat business and solid client relationships.

SERVICES

The diversity of our specialized services and our workforce has enabled Current Solutions, P.C. to undertake, and successfully complete, many types of projects in the commercial, residential, industrial, institutional and environmental arenas.

Our Services Include: Engineering design including: electrical power distribution & all specialty systems (telecommunications, data, fire alarm and more), value engineering, design-build, electrical construction cost estimating, feasibility studies, systems analysis, testing & studies, arc flash hazard analysis, short circuit & protective device coordination studies, instrumentation & controls design, construction administration (including shop drawing review and support) and electrical training.

PROJECT TYPES

Industrial, Manufacturing, Warehouse & Distribution Facilities • Commercial Buildings
Schools, Universities, Libraries & Dormitories • Wastewater Treatment Plants • Sub-Stations
Hotels and Resorts • Hospitals & Pharmaceutical Lab Facilities • Data Centers
Large Residential Homes, Developments & Apartment Complexes • Retail Facilities: Shopping Centers, Retail Stores, Supermarkets, Restaurants • Sports & Movie Complexes



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