





Arc Flash Analysis

Reduce Risk Improve Safety Enforce Compliance

ETAP Arc Flash Analysis estimates the arc flash incident energy under a bolted three-phase short circuit fault and determines the flash protective boundary to live parts for shock protection. Design safer power systems by insuring compliance with OSHA, NFPA 70E, and IEEE 1584™ standards. Determine the suitable Personal Protective Equipment (PPE) rating requirements based on calculated incident energy and arc flash boundaries integrated with coordination time of protective devices. The Arc Flash Analysis is conducted in conjunction with the ANSI/IEEE and IEC Short-Circuit Device Duty calculations.

 DANGER 		
	Arc Flash and Shock Hazard Flash Protection Boundary: 19.0 ft Incident Energy: 10.7 Cal/cm ² Working Distance: 24 in Required PPE Level: 3 Shock Hazard Voltage: 4160 VAC Limited Approach: 10.0 ft Restricted Approach: 2.2 ft Prohibited Approach: 0.6 ft Equip. ID: Sub 3	 11-08-2005

 DANGER 		
	Arc Flash and Shock Hazard Flash Protection Boundary: 2.7 ft Incident Energy: 3.2 Cal/cm ² Working Distance: 18 in Required PPE Level: 1 Shock Hazard Voltage: 480 VAC Limited Approach: 10.0 ft Restricted Approach: 1.0 ft Prohibited Approach: 0.1 ft Equip. ID: CR31	

Calculates the Potential Arc Flash Hazard

arc flash analysis

Key Features

- IEEE 1584-2002 Method
- NFPA 70E-2000 & 2004 Methods
- Cubic Box & Open Air Calculations
- Integrated with ANSI & IEC Short-Circuit
- Integrated with Star Device Coordination

Features

- Use 1/2 cycle or 1 1/2 to 4 cycle short circuit current
- Use system calculated or user-defined bolted fault current
- Automatically determine individual arcing current contributions
- Automatically determine the arcing fault clearing time
- Use system calculated or user-defined system grounding
- Automatic determination of hazard/risk categories for selecting PPE (based on NFPA 70E 2000 & 2004)
- User-defined hazard/risk categories for selecting PPE
- Quick incident energy calculator (bus arc flash page)
- Available plots for the calculated incident energy vs. time & arcing current in Star (device coordination)
- Flash protection, prohibited, restricted, & limited approach boundaries according to NFPA 70E
- Consider arcing current variation to determine the incident energy
- User-definable equipment gap between conductors/buses & X-factors
- Automatically determine bolted short circuit current for every faulted bus

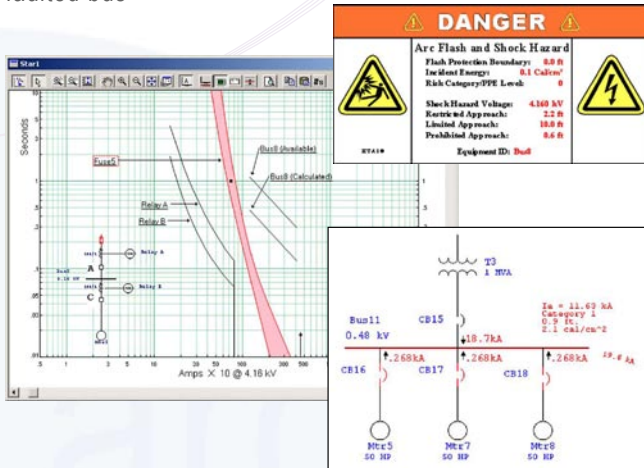
	NFPA 70E-2000	IEEE 1584-2002
Voltage Range	208 V - 600 V	208 V - 15kV (empirical) 15kV+ (Lee Method)
Current Range	16 kA - 50 kA	0.7 kA - 106 kA
1/2 Cycle		
Arc Duration Range	1/4 cycle - 120+ cycles	1/4 cycle - 120+ cycles
Installations	Open Air, Cubic Box	Open Air, Cubic Box, Cable Bus
Arc Distance	18" - 48"+	18" - 48"+
Unit of Measure	Cal/cm ²	Cal/cm ² or J/cm ²

Comparison of NFPA & IEEE Standards

Reporting

- Customizable reports & labels using Crystal Reports® software
- Hazard/risk categories, flash protection, prohibited, restricted, & limited approach boundaries
- Summary of arc flash results that includes all the faulted buses
- Alert for buses that exceed available ATPV limit of equipment
- Tabulated results for cal/cm² vs. time & working distance
- Calculated incident energy at working distance & fault clearing time

The screenshot displays a software interface for 'Arc Flash Analysis'. It includes a summary of fault data, a table of contribution from elements, and a detailed warning label. The label features a 'DANGER' header, a lightning bolt icon, and specific hazard information: Flash Protection Boundary (6.8 ft), Incident Energy (6.1 Cal/cm²), Risk Category (PPE Level 0), Shock Hazard Voltage (4.160 kV), Restricted Approach (12.0 ft), Limited Approach (18.0 ft), and Prohibited Approach (6.6 ft). The equipment ID is listed as Bus1.



Proactively & Accurately Protect Your Staff

- Unlimited Buses* & Elements
- No Voltage Limitations
- Looped & Radial Systems
- Multiple Generators & Grid Connections
- Multiple Isolated Sub-Systems
- Automatic Error Checking
- Graphical Display of Overstressed Devices

*Maximum number of energized buses during calculations is license dependent.

Capabilities

- Different label templates available for each faulted equipment
- Analysis of cable bus arcs (IEEE 1584-2002)
- Create labels for buses or individual protective devices
- Determine the flash protection boundary for enclosed & open air configurations
- Automatically determine the worst-case scenario fault clearing time from the Star TCCs.
- Determine incident energy exposure at working distance & fault clearing time
- Create regulation arc flash hazard equipment labels for every bus in the system
- Automatically update arc flash results to every bus in the system
- Display calculated arc flash results on the one-line diagram
- Computes the incident energy exposure in open air & cubic box



10 CFR 50 Appendix B • 10 CFR 21 • ANSI/ASME N45.2-1977 • ASME NQA-1
ISO 9001 A3147 • ANSI/IEEE Std 730.1-1989 • CAN/CSA-Q396.1.2-89

