

Arc Flash Hazard Analysis



Improve electrical safety by assessing arc flash hazard risk level and recommending safety measures

Risk management and prevention have always been important aspects of safety programs within the electric industry. The proper assessment of arc flash risk level can help minimize operational downtime and ensure a safer work environment.

The Arc Flash Hazard Analysis module computes the necessary parameters required to assess the risk level and help you adopt the appropriate safety procedures in order to minimize the risks of burns and injuries to those working on or near electrical equipment.

As a module integrated in the CYME Power Engineering Software, it allows you to evaluate the risk of arc flash hazards on any part of your network. It calculates the short-circuit fault current using its robust short-circuit calculation algorithm, finds the clearing time from time-current curves of our extensive device library, and calculates the resulting incident energy and risk level.

The module is compliant with industry recognized standards and methods to perform arc flash hazard calculations for industrial, distribution and transmission systems. These standards are:

- NFPA-70E 2004©, Electrical Safety Requirements for Employee Workplaces
- IEEE-1584™ 2002, Guide for Performing Arc-Flash Hazard Calculations

For the arc flash analysis in distribution and transmission systems, we have introduced two new algorithms in the module to cater for line-to-ground faults, which represent about 80% of the faults occurring on a distribution system. This added functionality facilitates the evaluation of arc flash hazards on any part of any network.

The new algorithms are based on:

- NESC© 2007
- Heat Transfer Model, based on Heat Flux Calculations

(Model published in Electrical Safety Handbook, By John Cadick, Mary Capelli-Schellpfeffer, Dennis K. Neitzel, Published by McGraw-Hill Professional, 2001, Chapter 3.52)

The bus data of any network created with our software can be supplemented with Arc Flash related information such as working distance, bus gap, connected equipment and exposed circuit enclosed in a box or in open air. In addition, the Arc Flash module calculates the maximum bolted short circuit levels at the desired work place (bus) for Arc Flash Hazard calculations.

WARNING	
500 VAC Arc Flash and Shock Hazard	
1.07 meters (36in)	Limited Approach (Qualified Person Only)
38 cm (15in)	Restricted Approach (PPE Required)
20 cm (8in)	Prohibited Approach (PPE Required)
0.22 meters (9in)	Flash Hazard Boundary (PPE Required)
Category 2 PPE Required (6.9 cal/sq cm)	
Eye and Face:	Welding mask or equivalent eye and face protection.
Body:	Flame resistant work clothes (e.g. 100% cotton or wool) and leather safety shoes.
Hand and Arms:	Leather gloves (Class 2) and safety glasses or face shield.
Feet:	Leather shoes (Class 2) and safety glasses or face shield.

Arc Flash Hazard Analysis

Model and include substations, sub-networks and secondary networks in your simulations.

Capabilities

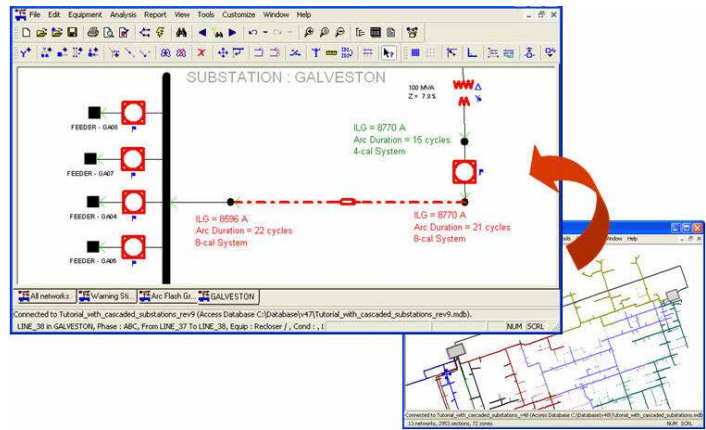
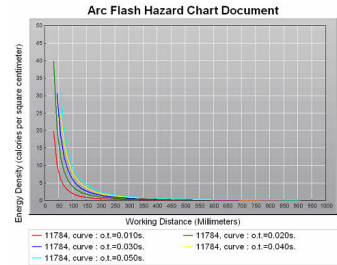
- One-line diagram and user-friendly GUI for all systems
- Batch mode simulation that will allow the analysis for every bus in the network in one single simulation
- Short-circuit current can be calculated using ANSI® or Conventional fault calculation methods. Using ANSI®, the reduced fault contribution of motors and generators are taken into consideration
- Calculation using default values depicted by standards, or using user-defined values
- Accurate opening time is obtained from the protective device time-current curve library
- The module is equipped with the automatic detection and validation of protection schemes in the network
- The display of results in a tabular report
- Possibility to generate required results in a chart

Warning Labels

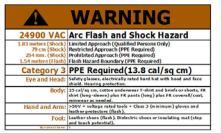
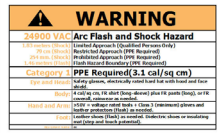
The program generates warning labels that are ready to be printed and affixed to the electrical equipment. Different label templates are available, and it is also possible to create custom warning labels.

These warning labels include all the necessary information such as:

- Arc Flash Hazard boundary
- Energy density
- Hazard / Risk category class.
- Personal Protective Equipment (PPE).
- Potential shock hazard.
- Limited, restricted and prohibited approach boundaries
- Equipment identification



Feeder Type	Class	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²	Working Distance (mm)	Cal/cm²
24900 VAC	Feed-Back	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12
24900 VAC	Feed-Back	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12
24900 VAC	Feed-Back	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12
24900 VAC	Feed-Back	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12
24900 VAC	Feed-Back	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12	24900	1.12



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