

ARC Flash Energy Analysis & Selection of Clothing Systems

AF1

NEW!

to Protect Electric Power & Communication Utility Employees

June 22-24, 2010

Myrtle Beach, SC

Instructors: Stephen Cress, P. Eng, Hugh Hoagland, and Allen L. Clapp, PE, or John B. Dagenhart, PE

About the seminar

The 2007 National Electrical Safety Code gave power and communication utilities until January 1, 2009 to determine the potential exposure to energy from electric arcs for employees who work on or near energized electrical lines and equipment. Employees are required to wear clothing or a clothing system with an effective arc energy rating greater than the anticipated level of energy. In order to comply, utilities must determine the expected levels of potential arc energy for employees performing work on or near various kinds of energized facilities and choose appropriate clothing systems to match the arc-energy requirements.

This seminar will discuss differences in the calculation methods commonly used in arc energy analysis, the data required for the analysis, where and how to collect the data, and how to use the results of arc energy analysis to determine appropriate articles or systems of clothing for electric power and communication workers to wear while performing specified work.

Arc incident energy calculations are based on NFPA 70E, IEEE 1584, and ArcPro. The hardest part of doing an arc hazard analysis for the first time is how to start and what to do. This course answers those questions by outlining the steps required to pull together all of the data needed to complete the analysis. The course is software neutral; any of the popular software suites can be used with these techniques. We tell you things that the software folks omit.

Who should attend

- ◆ Standards and Design Engineers
- ◆ Trainers and Safety Officers
- ◆ Industrial Engineers
- ◆ Contractors
- ◆ Work Method Inspectors
- ◆ Line Worker Managers

Important topics

- ◆ Common arc energy calculation methodologies
- ◆ Required data
- ◆ Applicable standards
- ◆ Fault current studies
- ◆ Effect of system protection equipment coordination
- ◆ Interpretation of results
- ◆ Selection of clothing or clothing systems to protect against arcs

In addition, you receive

- ◆ Bound student workbooks
- ◆ Exercise and answer sets
- ◆ 10% discount on IEEE 1584 Guide for Arc Hazard and Calculations
- ◆ CEUs or PDHs
- ◆ Plus continental breakfasts, complete lunches & refreshments

2.5 Days — \$1595

Day 1

Basic Utility Responsibilities

- Distribution system voltage levels
- National Electrical Safety Code rules
 - NESC history
 - Rules for employers—Section 41
 - Rules for employees—Section 42
 - Additional Rules for Communication Employees—Section 43
 - Additional Rules for Supply Employees—Section 44
- OSHA regulations and multi-employer workplace policy
 - OSH Act Sections 5a, 5b, and 6a—variance
 - 1910.269, .331, 332(a-b), .333(a), .335(a)(1)(i)
 - 1926.20(a), .20(b)(1-4), .21, .28, .100, .400(b), .416(a)

Arc Hazard Defined and Standard Terminology

- Arc Hazard – pressure, thermal radiation, sound levels and arc blast
- The terms you need to know

Personal Protective Equipment (PPE) - Types, Tests and Categories

- Types: Flame Resistant (FR) and Ignitable
- NFPA Categories zero to four and NESC options

Arc Hazard Standards – (rules)

- NESC C2-2007, NFPA 70E, IEEE 1584, CSA Z462

Models and Equations-Cress

- Lee – Theoretical, PCIC, Empirical, and ARCPRO™

Day 2

Arc Hazard Analysis Applications

- LV at Generation Plant/ Industrial
- MV at Transmission and Distribution

T&D Arc Hazard Assessment

- Data Gathering
- Distribution – OH Lines/UG Plant
- Stations – Bus, Equipment
- Transmission – Lines, Stations

Case Study – Steps and Examples

- LV Example – System Analysis Software
- MV Example – 1584, ArcPro™

Case Study – Steps and Examples Continued

Arc Hazard Mitigation

- Reducing arc hazards
- Mitigation methods and Equipment
- PPE - ASTM tests

Personal Protective Equipment (PPE) - Types, Tests and Categories

- Types: Flame Resistant (FR) and Ignitable
- NFPA Categories zero to four and NESC options

Day 3

How to select the right PPE

- Comfortable PPE systems for line workers and electricians
- Optimizing and customizing your clothing program
- Systems for climbers vs. systems for substation and underground workers
- Practical examples of clothing programs and clothing systems

[Day 3 only price - \$350.00]