



Electrical Engineering

ARC Flash Hazard Analysis: Impact, Control & Safety

Course Introduction

Electrical safety

Electrical safety is an important issue for those working on electrical facilities in utility networks and large industrial installations. A number of serious accidents including fatalities occur every year due to accidents involving electricity resulting in huge financial losses and wasted man-hours. Arc flashes in electrical equipment are now considered one of the major causes of electrical accidents even surpassing the well-known hazards of electric shock. Avoiding arc flash incidents and the resulting injuries is one of major challenges today facing electrical workers and requires adequate attention in the stages of system planning, design, installation, operation and maintenance.

Injuries due to arc flash can depend on many factors, one of which is the incident thermal energy on a worker exposed to a flash. Today, a considerable body of knowledge exists as a result of research efforts and is available to designers and maintenance engineers in the form of standards such as IEEE 1584 and NFPA 70E. This program will detail the basis of this approach and also about the major advances that have been made in the area of PPE made of FR fabrics and rated for different levels of thermal exposure. Prevention however still remains the best form of protection and switchgear manufacturers have made considerable design advances to ensure that the effect of arc flash incidents is contained within the enclosure of switchgear (often called arc flash resistant switchgear) and methods of testing such switchgear have also evolved simultaneously. Another important factor is the approach to avoid arc incidents within the switchgear by proper design and maintenance and techniques to reduce the severity of the flash should such incidents occur.

Target Audience

- Power system protection engineers
- System planners
- Technical staff responsible for Smart Grid integration into power system monitoring and control

Learning Objectives

- The importance of arc flash accident prevention in medium and high voltage electrical installation
- The necessity of working safely
- The dangers and hazards of high voltage electrical faults
- How to avoid accidents at your workplace
- Refresh your knowledge of the importance of safety in high voltage installations
- Understand the hazards of electricity
- Identify the dangers and risks of accidents in a high voltage installation
- Appreciate the principles of safety cultures
- Be careful and aware of arc flash accidents
- Recognize the effort of safety committees and their recommendations

Course Outline

- **DAY 01**

Module (01) What are arc flash hazards and their relevance to IEC, OSHA and NPFA standards?

- 1.1 Overview and definition of arc flash hazards
- 1.2 International standard requirements against arc flashes
- 1.3 Implementation of lock out tag out and its significance
- 1.4 Arc flash and other electrical safety hazards
- 1.5 IEC Standard Time/Current Zones effects of AC currents on persons
- 1.6 Electrically safe working environment
- 1.7 How over current protective devices can reduce arc flash hazards
- 1.8 Grounding and arc faults
- 1.9 Case Studies and Work Sessions

- **Day 02**

Module (02) The impact of arc flash accidents. How can such incidents be avoided and controlled?

- 2.1 Factors determining the severity of arc flashes and arc blasts
- 2.2 Implementation of electrical safety programs
- 2.3 Electric shock hazards
- 2.4 Arc flash incidents
- 2.5 Arc flash safety solution
- 2.6 How to avoid arc flash accidents?
- 2.7 Arc proof switchgears
- 2.8 Current limiting fuses and arc flash
- 2.9 Case studies and work sessions

• Day 03

Module (03) Understanding limits of approach boundaries and its significance. Hazardous areas classifications and labeling

- 3.1 Limits of approach
- 3.2 Hazardous Area Classifications
- 3.3 Importance of hazard warning labeling
- 3.4 Electrical intrinsic safety
- 3.5 Incident energy
- 3.6 Hazards risk categories
- 3.7 ATEX
- 3.8 DSEAR
- 3.9 Discussion and case studies

• Day 04

Module (04) Arc flash safety and hazard analysis. Control of internal arc faults

- 4.1 Arc flash hazards analysis
- 4.2 Arcing flash safety and maintenance
- 4.3 ARMS – Arcflash Reduction Maintenance Switch
- 4.4 Incident energy verses bolted faults
- 4.5 Personal protective equipment categories
- 4.6 IEC standards on arc flash hazards

- 4.7 Consequences of an internal arc
- 4.8 Discussion and case studies

• **Day 05**

Module (05) Arc flash accident prevention programs, solutions, risk assessments and safety committees

- 5.1 Arc flash accidents and preventions
- 5.2 Arc flash hazards calculations
- 5.3 Avoiding arc flash blasts
- 5.4 Risk Assessment applied to Electrical Equipment and Isolation
- 5.5 Examining Ways to improve the Company's Existing Electrical Safety Record
- 5.6 Safety committees and responsibilities
- 5.7 Accident prevention programs
- 5.8 Questions and answer, course wrap up

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 18, 2025	May 22, 2025	5 days	4250.00 \$	KSA - Riyadh
Dec. 29, 2025	Jan. 2, 2026	5 days	4250.00 \$	UAE - Dubai
Aug. 18, 2025	Aug. 22, 2025	5 days	4950.00 \$	Netherlands - Amsterdam