Comprehensive Arc Flash and Electrical Safety Training Course



21 - 25 Dec 2026

Cape town

4600 € (Per Person)

Ref: #HSE9699_276660

Course Introduction / Overview:

Electrical hazards, particularly arc flash incidents, pose one of the most severe risks in the modern workplace, capable of causing devastating injuries and significant operational downtime. This course provides a comprehensive framework for understanding, assessing, and mitigating these dangers. Moving beyond basic compliance, this program delves into the intricate science behind electrical hazards, grounded in leading industry standards such as NFPA 70E and OSHA regulations. We will explore the principles detailed in seminal works like "The Electrical Safety Program Book" by Ray A. Jones, ensuring participants receive a robust and academically sound education. The curriculum is designed to transform theoretical knowledge into practical, life-saving skills. At BIG BEN Training Center, we are committed to empowering professionals with the expertise to not only protect themselves and their colleagues but also to champion a culture of electrical safety within their organizations. This training covers everything from initial hazard identification and risk assessment to advanced arc flash analysis, the proper selection of Personal Protective Equipment (PPE), and the development of a world-class electrical safety program.

Target Audience / This training course is suitable for:

- Electrical Engineers and Technicians.
- Maintenance and Operations Personnel.
- Health, Safety, and Environment (HSE) Managers.
- Facility and Plant Managers.
- Project Managers and Supervisors.
- Instrumentation and Control Specialists.
- Compliance and Regulatory Officers.
- Anyone responsible for electrical safety programs.

Target Sectors and Industries:

- Manufacturing and Industrial Plants.
- Oil, Gas, and Petrochemical sectors.
- Power Generation and Utility Companies.
- Construction and Engineering Firms.
- Data Centers and Telecommunications.
- Healthcare Facilities and Hospitals.
- Commercial and Residential Property Management.
- Governmental and Public Sector works agencies.

Target Organizations Departments:

- Engineering and Design Departments.
- Maintenance and Reliability Departments.
- Health, Safety, and Environmental (HSE/EHS) Departments.
- Operations and Production Departments.
- Facilities Management Departments.
- Project Management Departments.
- Quality Assurance and Control Departments.
- Training and Development Departments.

Course Offerings:

By the end of this course, the participants will have able to:

- Interpret and apply NFPA 70E and relevant OSHA standards for electrical safety.
- Conduct thorough shock and arc flash risk assessments.
- Establish electrically safe work conditions using lockout/tagout (LOTO) procedures.
- Calculate arc flash boundaries and determine appropriate PPE levels.
- Develop and implement an effective energized electrical work permit system.
- Select, inspect, and maintain proper arc-rated clothing and protective equipment.
- Manage and audit a comprehensive electrical safety program.
- Investigate electrical incidents and implement corrective actions.
- Foster a proactive and sustainable electrical safety culture within the organization.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, interactive, and highly practical, ensuring that participants can immediately apply their learning in the workplace. We move beyond traditional lectures by incorporating a dynamic blend of expert-led presentations, detailed case study analyses of real-world electrical incidents, and collaborative group workshops. Participants will engage in hands-on exercises, such as performing simulated arc flash risk assessments and developing lockout/tagout procedures for complex systems. Interactive sessions encourage open dialogue, allowing attendees to share their unique challenges and learn from the collective experience in the room. Our instructors facilitate problem-solving scenarios that mirror the complexities of industrial environments. Continuous feedback is provided throughout the course to reinforce key concepts and ensure a deep understanding of critical safety practices. This blended learning approach guarantees that participants not only grasp the theoretical principles of electrical safety and arc flash protection but also build the confidence and competence to implement them effectively.

Course Agenda (Course Units):

Unit One: Foundations of Electrical Safety and Regulatory Standards

- Introduction to Electrical Hazards.
- The Physics of Electricity and Arc Flash Phenomena.
- Understanding OSHA 29 CFR 1910 Subpart S.
- Deep Dive into NFPA 70E Standard for Electrical Safety in the Workplace.
- Roles and Responsibilities of Employers and Employees.
- Distinguishing Between Qualified and Unqualified Persons.
- The Importance of an Electrical Safety Program.

Unit Two: Hazard Identification and Risk Assessment

- Principles of Risk Assessment and the Hierarchy of Controls.
- Identifying and Analyzing Shock Hazards.
- Establishing Shock Protection Boundaries.
- Methods for Identifying Arc Flash Hazards.
- The Process of Performing an Arc Flash Risk Assessment.
- Understanding and Creating an Electrically Safe Work Condition.
- Human Factors and Their Impact on Electrical Safety.

Unit Three: Arc Flash Hazard Analysis and Mitigation

- Introduction to the IEEE 1584 Standard.
- Methods for Performing Arc Flash Calculations.
- Determining the Arc Flash Boundary.
- Calculating Incident Energy at Working Distances.
- Understanding and Interpreting Arc Flash Warning Labels.
- Strategies for Arc Flash Hazard Mitigation.
- The Role of Protective Device Coordination in Reducing Arc Flash Energy.

Unit Four: Controls, Procedures, and Personal Protective Equipment (PPE)

- Implementing Effective Lockout/Tagout (LOTO) Programs.
- Developing and Managing Energized Electrical Work Permits.
- Safety Procedures for Working On or Near Live Parts.
- Selection and Use of Arc-Rated (AR) Clothing and PPE.
- Care, Inspection, and Maintenance of Electrical PPE.
- Requirements for Insulated Tools and Equipment.
- Establishing Safe Work Practices for Specific Equipment.

Unit Five: Developing and Managing an Electrical Safety Program

- Key Components of a Successful Electrical Safety Program.
- Strategies for Auditing Electrical Safety Programs and Practices.
- Electrical Safety Training and Retraining Requirements.
- Emergency Response Planning for Electrical Incidents.
- Incident Investigation and Root Cause Analysis.
- Fostering a Proactive Electrical Safety Culture.
- Continuous Improvement in Electrical Safety Management.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Beyond regulatory compliance, how can an organization measure the true return on investment of a robust electrical safety culture?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by focusing on the practical implementation of a sustainable safety culture, rather than merely reciting regulatory standards. While many programs cover the "what" of NFPA 70E and OSHA, we emphasize the "how" and "why." We achieve this through an in-depth analysis of real-world incident case studies, allowing participants to deconstruct failures and understand the human and organizational factors that lead to accidents. Our curriculum is uniquely structured to bridge the gap between engineering analysis and on-the-ground work practices. Instead of just teaching how to calculate incident energy, we facilitate workshops on how to effectively communicate these risks to field personnel and integrate findings into daily work permits and job briefings. The expertise provided by BIG BEN Training Center focuses on proactive mitigation strategies and the leadership skills required to champion electrical safety. Participants will leave not just as trained individuals, but as safety advocates equipped to drive meaningful, lasting change within their organizations, ultimately transforming safety from a compliance task into a core organizational value.