Advanced Radiation Protection Training Course

Course general description:

This **Advanced Arc Flash Hazard Analysis** course is designed for electrical engineers, safety professionals, and maintenance personnel responsible for **electrical safety, hazard analysis, and risk control in industrial and commercial facilities**. It provides an in-depth understanding of **arc flash hazards, risk assessments, calculation methods, PPE selection, and mitigation strategies** based on **NFPA 70E, IEEE 1584, OSHA 1910.269, and NEC guidelines**.

The course includes **hands-on exercises and practical applications**, focusing on **arc flash calculations, incident energy analysis, and PPE selection based on real-world scenarios**.

Key Learning Areas:

✔ **Arc Flash Fundamentals & Risk Factors**
✔ **Incident Energy Calculations (IEEE 1584 & NFPA 70E Methods)**
✔ **Arc Flash Boundary & PPE Category Selection**
✔ **Short-Circuit & Coordination Studies**
✔ **Mitigation Strategies & Arc-Resistant Equipment**
✔ **Electrical Safety Programs & OSHA Compliance**

Audience:

This course is intended for:

- **Electrical Engineers & Technicians**
- **Safety Professionals & HSE Managers**
- **Industrial Maintenance & Operations Personnel**
- **Electrical Contractors & Facility Managers**
- **Compliance & Risk Assessment Teams**

Course objectives:

- **Understand arc flash hazards & risk factors in electrical systems.**
- **Apply NFPA 70E and IEEE 1584 arc flash calculation methods.**
- **Perform incident energy analysis and determine arc flash boundaries.**
- **Select appropriate PPE based on calculated hazard levels.**
- **Implement arc flash mitigation strategies & protective device coordination.**
- **Develop arc flash risk assessments and compliance strategies.**
- **Understand electrical safety regulations and best practices.**

Course duration:

5 days

Course location:

Dubai

Course contents:

Day 1: Arc Flash Fundamentals & Regulations

- **Pretest**
- **Introduction to Electrical Hazards**
  - Shock Hazards vs. Arc Flash Hazards
  - Causes & Consequences of Arc Flash
- **Regulatory & Compliance Requirements**
  - **NFPA 70E (Standard for Electrical Safety in the Workplace)**

    - **IEEE 1584 (Guide for Arc Flash Hazard Calculations)**
    - **OSHA 1910.269 & NEC Requirements**
- **Arc Flash Hazard Risk Categories & PPE Requirements**
- **Case Studies of Real Arc Flash Incidents**

Day 2: Arc Flash Risk Assessment & Calculation Methods

- **Arc Flash Hazard Analysis Methodology (NFPA 70E & IEEE 1584)**
- **Step-by-Step Arc Flash Risk Assessment**
    - Identifying Equipment & System Parameters
    - Determining Available Short-Circuit Current
    - Calculating Arc Flash Incident Energy (cal/cm²)
- **Understanding Arc Flash Boundary & Limited Approach Distances**
- **Short-Circuit & Coordination Study Basics**
- **Workshop:** Incident Energy Calculation Using IEEE 1584 Equations

Day 3: Advanced Arc Flash Calculations & Mitigation Strategies

- **IEEE 1584 Equations & Software-Based Analysis**
- **Arc Flash Boundary Calculation Methods**
- **Protective Device Coordination & Reduction Techniques**
    - Circuit Breaker Trip Settings
    - Current-Limiting Fuses & Relays
    - Arc Energy Reduction Strategies
- **Labeling & Hazard Communication for Arc Flash Safety**

Day 4: PPE Selection, Electrical Safety Programs & Safe Work Practices

- **Personal Protective Equipment (PPE) Selection (NFPA 70E Tables)**
    - Arc-Rated Clothing & Suit Ratings
    - Insulated Gloves & Face Shields
    - Equipment Inspection & Maintenance
- **Establishing an Electrical Safety Program**
    - Safety Work Practices & Training Requirements
    - Lockout/Tagout (LOTO) for Electrical Safety
- **Emergency Response & First Aid for Arc Flash Incidents**
- **Workshop:** Selecting Proper PPE Based on Real-World Scenarios

Day 5: Practical Implementation & Compliance Strategies

- **Arc Flash Mitigation Strategies & Engineering Controls**
    - Arc-Resistant Switchgear & Remote Operation
    - Zone Selective Interlocking & Differential Relays
    - Maintenance Mode Settings & Safety Enhancements
- **Developing Arc Flash Compliance Plans**
    - OSHA Compliance Audits & Best Practices
    - Arc Flash Safety Documentation & Reporting
- **Final Practical Exercise & Arc Flash Simulation**

Methodology:

- 50% lectures & concepts
- 10% Videos
- 10% Case studies
- 10% Exercises

- 10% Discussions

Assessment and Certification:

Upon completion, participants will receive a **Certificate in Arc Flash Hazard Analysis & Risk Management**, validating their expertise in **NFPA 70E, IEEE 1584, and OSHA compliance**.

Course code: (THSE006)