CAREER MANAGEMENT CONSULTANCY &TRAINING
كرير للإستشارات الإدارية والتدريب

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EE039:
Practical Electrical Safety Techniques for Industry

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Training Description:

A number of serious accidents and fatalities occur every year in the industry due to accidents involving electricity, taking a huge financial and human toll. The dangers and risks from electrocution, shock, explosions and arc blast can never be eliminated but you can take definite steps to protect yourself and your co-workers.

Safety should be built into the design of electrical equipment and followed up with proper installation, operation, maintenance and periodic inspection. Electrical safety is not just a technical issue. Accidents can only be prevented if appropriate safety procedures are developed and enforced. This includes complete familiarity with equipment and systems often imparted through structured training to each and every person who operates or maintains the equipment. In this course, we will take a look at the theoretical aspects of safety as well as the practical issues including the statutory and safety-training related aspects. This know how will certainly enable participants to deploy appropriate safety procedures in their workplace and improve their safety record.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Learn the approved ways of operating and earthing high voltage equipment to ensure safety of personnel at all times
- ✓ Know the difference between safe and unsafe working conditions
- ✓ Know the requirements for a responsible person or appointed operator
- ✓ Learn the documentation required for Occupational Safety and Health Acts
- ✓ Learn the live Chamber and limited access procedures

Training Designed for:

This course is intended for Building Service Designers, Consulting Engineers, Data Systems Planners and Managers, Electrical Engineers, Electrical, Mechanical and Instrumentation Technicians, Instrumentation and Control Engineers, Maintenance Technicians and Engineers, Mechanical Engineers, Power system protection and Control Engineers, Project Engineers as well as any staff working within an industrial environment will benefit from this training, all staff that may enter, pass by or have any direct or indirect contact with electrical infrastructure should attend.

Training Program:

DAY ONE:

- ❖ Pre-Test
- ❖ Introduction
- ❖ Principles of Safety Rules
  - Electrical hazards
  - Requirements for safety
  - Operative training
  - Personnel levels of competency
  - Safety documentation

- Work on live systems, close to live systems

❖ Electrical Shock and Methods of Shock Prevention

- Shock – direct and indirect contact
- Touch and step potential
- Effects of shock on the human body
- The deadly combination of heights and electric shock
- Locations of increased shock risk
- Principles of shock protection
- First-aid for burns and electric shock
- Earth leakage circuit breakers
- Role of electrical insulation in safety

DAY TWO:

❖ Hazards Due to Electrical Arcing and Heating

- Arc flash definition
- Arc blast
- Hazards due to arcing/flashover
- Effects of arc flash on humans
- Physiological effects
- Tissue damage
- Internal organ damage
- Burns
- Fibrillation
- Curable 2nd degree burn
- Arc blast pressure, sound pressure
- Reducing arc-flash hazards
- Minimise risk with good safety practical
- Consideration for new equipment
- Reduce the available fault current
- Increasing worker distance
- Faster tripping time
- Hazards from use of electrical equipment in explosive environment
- Hazards due to high temperature in electrical equipment

❖ Static Electricity and Protection

- What is static electricity?
- Generation of charge
- Common examples of static build-up
- Energy of spark and its ignition capability
- Dangers of static electricity build-up
- Control of static electricity
- Static electricity danger in un-energised overhead lines
- Assessment of static risks and planning prevention

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DAY THREE:

- Hazards Due to Electrical Arcing and Heating
  - Arc flash definition
  - Arc blast
  - Hazards due to arcing/flashover
  - Effects of arc flash on humans
  - Physiological effects
  - Tissue damage
  - Internal organ damage
  - Burns
  - Fibrillation
  - Curable 2nd degree burn
  - Arc blast pressure, sound pressure
  - Reducing arc-flash hazards
  - Minimise risk with good safety practical
  - Consideration for new equipment
  - Reduce the available fault current
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  - Faster tripping time
  - Hazards from use of electrical equipment in explosive environment
  - Hazards due to high temperature in electrical equipment
- Static Electricity and Protection
  - What is static electricity?
  - Generation of charge
  - Common examples of static build-up
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DAY FOUR:

- Earthing and Bonding
  - Objectives of earthing
  - Earthing of power supply systems and its safety implications
  - Role of earthing of equipment enclosures (protective earthing) in human safety
  - Neutral earthing of electrical supply systems
  - Thermal capability
  - Use of protective metallic conduits for earthing conductors
  - Objectives of bonding
  - Equipotential bonding SUBSTATION SAFETY
  - Safety while working in outdoor switchyards and overhead lines
  - Special precautions when working on switch gear

- Substation check list
- Fire protection in substations

❖ Safety in Battery Installations

- Hazards involved in lead-acid battery installations
- Premises used for housing lead acid batteries
- Transportation and storage
- Installation and commissioning
- Charging and storage
- Dismantling and disposal
- Protective clothing

DAY FIVE:

❖ Regulations Governing Workplace Safety (Country-Specific)

- Evolution of safety-related legislation
- Safety at work act
- Electricity at work regulations
- Electricity supply regulations
- Electricity usage regulations
- Special regulations for hazardous areas (ATEX or other applicable rules)
- Codes of practice (non-mandatory guidelines)

❖ Organisational Requirements of Safety

- Statutory requirements for working in electrical installations
- Competency and authorisation
- Responsibility of employer and employee in regard to electrical safety at work
- Safety organisation within the company
- Accident reporting, investigation, analysis and prevention
- Safety awareness promotion among workforce and importance of appropriate training

❖ Course Conclusion

❖ Post-Test and Evaluation

Training Requirements:

"**Hands-on practical sessions, equipment** and **software** will be applied during the course if required and as per the client's request".

Please note that the above topics can be amended as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test

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Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

For training registrations or in-house enquiries, please contact:
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Training & Career Development Department