HS010: Energy Isolation: Standards, Techniques and Best Practices
Training Description:

It is important for modern day process plants, large industrial installations, Oil & Gas plants and offshore installations to be able to implement methods of operation which are reliable, proactive and cost effective. In the 21st Century, a modern practice to ensure that practical and cost effective are utilized, is to have a multi-skilled workforce.

This intensive training course will provide authorized workers with step-by-step procedures for isolating equipment using such techniques as lockout tagout, lockbox, blinding, misalignment, double block and bleed, and single valve isolation. The course emphasizes each employee’s responsibilities during those procedures using practice exercises and simulations. Key Topics Covered: Energy Isolation Standard, the types of energy sources, potential hazards, and step-by-step procedures for isolating equipment.

The course will highlight:
- The importance of regional Legislative requirements
- Best Practice Verses Minimum requirement
- Safe working Practices
- Electrical Isolation and procedures
- Instrumentation system isolation
- Mechanical Isolation
- Common problems and solutions

Training Objectives:

To provide the necessary competencies, skills and knowledge to enable course participants to use the proper procedures for isolating the energy source(s). The training course covers recognition of hazardous energy sources, procedures and methods of isolation and specific standards and practices for electrical and mechanical energy isolation.

By the end of the training, participants will be able to:
- Demonstrate familiarity with the principals of Energy Isolation
- Demonstrate a basic understanding energy sources
- Demonstrate a basic awareness of procedures standards and practices
- Understand the need for implementing Safe Systems of Work
- Understand common terminology related to isolations and control
- Understand common energy hazards
- Understand the differences between Best Practice and Minimum requirement for Energy Isolation
- Understand the purpose, principles and practices of isolation procedures and safety rules – for their own role, and for others involved in the operation of isolations systems and the legal issues associated with same
- Identify Primary Isolation practices versus Positive Isolation practices; including where and when each is used. Also understand industry terms associated with these objectives.
- Identify the different pieces of equipment used in positive isolation including where and when they should be utilized
✓ Identify the hazards pertaining to loss of containment and personal injury, conduct risk assessment and identify Risk Reduction measures using the As Low as Reasonably Practicable (ALARP) qualification
✓ Describe the Roles and Responsibilities with achieving safe and reliable process isolation.
✓ Describe the stages involved in achieving safe process isolations and demonstrate their ability to design and implement the various forms of process isolations in a range of scenarios.
✓ Demonstrate their ability to safely re-instate plant

Personal Impact:
✓ Participants will be able to gain a thorough knowledge of Health & Safety requirements, the electricity at work regulations and common industry practices such as ‘Permit to Work’ and safe isolation techniques such as ‘LOTO’
✓ Participants will be able to apply safe working practices when working with Extra Low Voltage, Low Voltage and some High Voltage applications
✓ Can use a variety of Engineering drawings such as Single-line, Schematic, Component, PLC, Hook-up, P&ID and Loop drawings
✓ A good working knowledge of isolation and risk assessment procedures for the plant
✓ Participants will be aware of different roles within the Electrical safety rules, such as CEP, CIP, SAEP, RPE AND SEA
✓ Participants will become familiar with Instrumentation systems and Mechanical systems
✓ Gain familiarity with problems associated with Electrical, Instrument and Mechanical isolation

Organisational Impact:
✓ Reduced costs for organisations, when Energy Isolation activities can be kept ‘in-house’
✓ Downtime of equipment will be minimized, due to delegate increased knowledge
✓ Participants are conversant in Health & Safety and legal requirements when working with Electrical, Instrument and Mechanical equipment
✓ Participants are up-to-date with current practices and techniques when using Electrical, Instrument and Mechanical technology
✓ Participants with gain a very good basic understanding of a variety of Electrical, Instrument and Mechanical equipment
✓ Participants will be able to apply good practice techniques to diagnose problems with Electrical, Instrument and Mechanical equipment

Training Designed for:
This course is intended for those Operatives/Employees working with Processes, Operatives/Employees working with Machines or equipment in which the sudden release of energy could cause injury or damage, Persons with specific plant responsibility, Persons with Technical executive function, Qualified Supervisors within an Energy Isolation environment, Plant Operators and Operator Technicians within the Onshore and Offshore Oil and Gas Industry, Plant Operators and Operator Technicians within the Petrochemical and Manufacturing Industry, Any other plant personnel directly responsible for performing Safe Process Isolations, Any other plant personnel indirectly responsible for performing Safe Process Isolations. Such persons may include Senior Operational Managers and anyone who monitors, audits and reviews isolations systems.
Training Program:

**DAY ONE:**
- PRE-TEST
- Introduction
- **Energy, Legislative Requirements and Codes of Practice**
  - What is Energy
  - Common Energy Sources
  - OSHA requirements and Electricity at Work Regulations
  - Procedures, Standards and Approved Codes of Practice

**DAY TWO:**
- Safe Systems of Work, Electrical Isolation and LOTO
  - Introduction to Energy Isolation (Electrical)
  - Safe Systems of Work
  - Safe working practices
  - Electrical Isolations and Techniques
  - LOTO requirements
  - Earthing requirements for isolation
  - Issues/problems associated with Electrical Isolation

**DAY THREE:**
- **Documentation, Instrumentation, Control and Associated Mechanical Systems**
  - Isolation Confirmation Certificates
  - Introduction to Energy Isolation (Instrumentation)
  - Instrument isolation Techniques
  - Intrinsically safe systems and dangers associated with Intrinsic safety
  - Safe Systems of Work
  - ELV isolation for Instrument energy sources
  - ‘Block and Bleed’ Techniques
  - Isolation of Instrument piping
  - Isolation of Instrument devices used in process control
  - Issues/problems associated with Instrumentation Isolation

**DAY FOUR:**
- **Mechanical Systems, Hydraulics, Pneumatics and Potentially Explosive Energy**
  - Introduction to Energy Isolation (Mechanical)
  - Safe Systems of Work and Safe working practices
  - Mechanical Isolation Techniques
  - Valves, Gearboxes and Motors
  - Piping, Pipe Flanges and Joints
  - Hydraulic and Pneumatic Isolation
  - Issues/problems associated with Mechanical Isolation
  - Introduction to Potentially Explosive Atmospheres
  - Standards and Good practices
Practical Sessions
- This hands-on, highly-interactive training includes real-life case studies and exercises

**DAY FIVE:**

- Potentially Explosive Energy and Concepts
  - Safe working practices
  - Overview of Potential Electrical Energy release risks
  - Overview of Potential Instrument Energy release risks
  - Overview of Potential Mechanical Energy release risks
  - Ignition Energy Assessment of process/Oil & Gas operations
  - Overview of Equipment concepts (Ex d, Ex e, Ex n, Ex i, d, c, k, b, Fr)

- 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

**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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