Energy Isolation

INTRODUCTION

- 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 effectives are utilized, is to have a multi-skilled workforce.
- This Energy Isolation 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. It 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.

This training seminar will highlight:

- The Importance of Regional Legislative Requirements
- Best Practice vs. Minimum Requirement
- Safe Working Practices
- Electrical Isolation and Procedures
- Instrumentation System Isolation
- Mechanical Isolation
- Common Problems and Solutions

OBJECTIVES

- To provide the necessary competencies, skills and knowledge to enable course delegates to use the proper procedures for isolating the energy source(s). This Energy Isolation 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 this training course, participants will learn 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

TRAINING METHODOLOGY

- A variety of technical lectures, practical demonstrations and practical exercises will be used to deliver the training to candidates. Case studies and examples of good and bad practice will also be demonstrated through practical demonstration and case study DVD and also group activity and discussion. At the end of this Energy Isolation training course, Written Assessment will also be completed by all delegates.

ORGANISATIONAL IMPACT

- The impact from sending your work force onto this training course are wide and far reaching. Delegates will gain a variety of practical and theoretical knowledge which complies with current practice and legislation. The knowledge gained by delegates can be applied back in their work roles and can be used to ensure the following:
- Reduced costs for organisations, when Energy Isolation activities can be kept ‘in-house’
- Downtime of equipment will be minimized, due to delegate increased knowledge
- Delegates are conversant in Health & Safety and legal requirements when working with Electrical, Instrument and Mechanical equipment
- Delegates are up-to-date with current practices and techniques when using Electrical, Instrument and Mechanical technology
- Delegates with gain a very good basic understanding of a variety of Electrical, Instrument and Mechanical equipment
- Delegates will be able to apply good practice techniques to diagnose problems with Electrical, Instrument and Mechanical equipment

PERSONAL IMPACT

- Delegates 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'
- Delegates will be able to apply safe working practices when working with Extra Low Voltage, Low Voltage and some High Voltage applications
- Be able to 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
- Delegates will be aware of different roles within the Electrical safety rules, such as CEP, CIP, SAEP, RPE AND SEA
- Delegates will become familiar with Instrumentation systems and Mechanical systems
- Gain familiarity with problems associated with Electrical, Instrument and Mechanical isolation

WHO SHOULD ATTEND?

This training course is suitable to a wide range of professionals but will greatly benefit:

- 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

Course Outline

Energy, Legislative Requirements and Codes of Practice

- Introduction
- Pre-Assessment
- What is Energy?
- Common Energy Sources
- OSHA requirements and Electricity at Work Regulations

Safe Systems of Work, Electrical Isolation and LOTO

- Recap on
- 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

Documentation, Instrumentation, Control and Associated Mechanical Systems

- Recap on
- 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

Mechanical Systems, Hydraulics, Pneumatics and Potentially Explosive Energy

- Recap on
- 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

Potentially Explosive Energy, Concepts and End of Course Assessment

- Recap on
- 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