

# **Modern HAZOP Process**



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#### **Modern HAZOP Process**

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### Introduction

It is universally recognised that for any company to succeed it must take a proactive approach to risk management. Over the last few years Companies and a number of Countries legislators have been focusing on Process Safety as a method to reduce the risks posed by hazardous industries. Process Hazard Analysis PHA is recognised as being a critical tool in the implementation of a successful risk management system. As Hazard and Operability HAZOP studies are now recognised world-wide as being the qualitative risk assessment methodology of choice in the Process Industries, there will be additional focus on this specific aspect of Process Hazard Analysis.

### **Course Objectives of HAZOP Process**

- Understand the concepts of Risk Assessment and Risk Management
- Understand the estimation and evaluation of risks Qualitative, Semi-Quantitative and Quantified Risks
- Techniques for Hazard Identification and Analysis Check-Lists, Risk Profiling, HAZOP, FMEA and Task-Based Risk Assessment
- Cause-Consequences Analysis The Role of Fault Trees and Event Trees in Accident Prevention
- Understand the requirements of a Team Leader or Facilitator, scribe and team members during HAZOP studies

### **Course Outlines of HAZOP Process**

#### Day 1

#### **Introduction to Risk Assessment**

- Course introduction: delegate and tutor introductions; course objectives
- The concepts of hazards, risk and risk assessment
- · Methods for risk evaluation
- Integrating risk assessment within Risk Management
- Qualitative, Semi-Quantitative and Quantitative Risk Assessment methodologies
- Feedback and review of Day 1

Day 2

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#### **Risk Assessment Techniques: HAZOP**

- Introduction to hazards identification and analysis techniques
- Techniques for hazard identification and analysis HAZOP
- Where and when to use HAZOP and the requirements for a successful HAZOP study
- Team composition for HAZOP studies
- Guide words and process variables used for HAZOP studies
- Syndicate exercise application of HAZOP to relevant processes
- Report back and review of Day 2

#### Day 3

#### **Hazop Leadership Techniques**

- HAZOP team leader/facilitator requirements
- HAZOP scribe requirements
- Facilitating HAZOP studies, do's and don'ts
- Information required to allow successful HAZOP studies
- Case study where each delegate has the opportunity to facilitate a HAZOP meeting
- Review of commercial software used for HAZOP and Management of Change 'MOC'
- Report back and review of Day 3

#### Day 4

#### **Consequence Analysis**

- Theory behind the fire, explosion and toxic dispersion modeling utilized in Quantitative Risk Assessments
- Types of fires and their effects on people and equipment
- Types of explosions and their effects on people and equipment
- Review of software available for consequence calculations
- Report back and review of Day 4

#### Day 5

#### The Role of QRA

- Introduction to Quantified Risk Assessment "QRA"
- The role of Event Tree Analysis in scenario development
- The role of Fault Tree Analysis for multi-causation analysis
- Applications for ETA and FTA
- · Failure data for use in ORA's
- Societal Risk and Individual Risk
- Review of software available for Quantitative Risk Assessments
- Report back on day 5 and discussion
- Programme review and the way ahead



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