Course title:

Bowtie Analysis for Primary Reformer Firebox Explosion Case Study

Bowtie Analysis and Barrier-Based Risk Management

Introduction:

The bowtie methodology is designed to provide the right level of detail to facilitate understanding and risk-based decision making, without oversimplifying a process.

This course will help you better understand the methodology and how to conduct a bowtie analysis effectively in the management of process safety and environmental and asset integrity scenarios.

The course covers an example of a top fired primary reformer which exploded in an ammonia plant. Incident investigation concluded that the direct cause of the accident was the introduction, by error, of a large amount of fuel gas through unlighted arch burners.

(Reference Training Code: CAST02)

Duration 1 hour.

Course outline:

Lessons

1. Bowtie concepts and risk management
2. The bowtie model for the case study
3. Barrier management

Learning outcomes:

By the end of this training course you will understand:

- when and why to use bowtie analysis

Author(s) / Trainer(s):

David Hatch

Process Hazard Analyst,

David Hatch is an IChemE Professional Process Safety Engineer with 35 years' experience of major accident hazard facilities and design, operating and consulting roles in highly regulated industries including oil and gas, pharmaceuticals, energy and chemicals.

David is a Fellow of the IChemE and a member of the IChemE Safety and Loss Prevention Special Interest Group. He is a specialist in process hazard analysis and alarm management (an active contributor to the development of international Alarm Management (ISA.S18.2) and Human-Machine Interface (EEMUA 201) standards); authoring and presenting papers on these key subjects.

He has practical application experience of functional safety management principles including SIS specification and design and SIL verification in accordance with recognised international standards (IEC 61511). He is a Certified Functional Safety Expert (CFSE) and a TÜV Functional Safety Engineer (FSE).

David specialises in bowties and barrier-based risk management and analysis visualisation. He developed and delivers bowtie training for the IChemE and is a CGE Risk Certified Value Added Partner.

- individual bowtie components and how they are assembled to illustrate a scenario
- how to apply bowtie methodology including the process for developing bowties in a sequential, logical order
- the vulnerabilities of barriers (SCE) associated with the case study
- how to sustain barrier effectiveness by learning from planned demands (audits) and unplanned demands (incidents)

Who will benefit:

Anyone with a basic knowledge of the bowtie methodology but is seeking to become more expert in its application. The course would particularly benefit management, engineering and operations/maintenance personnel with responsibility for managing hazards and implementing/sustaining risk control measures.

Course materials:

- Hand-out presentation slides in PDF format

Price:

€ 120

Discounts:

- 2 places – 10% discount
- 3 places – 15% discount
- 4 or more places – 20% discount.

In-company training:

This course is also available as an in-company course (face-to-face or online) where content can be customised to meet your organisation's specific needs and delivered on a date/location that suits your requirements.

Contact us for more information.

Training code: PSM05