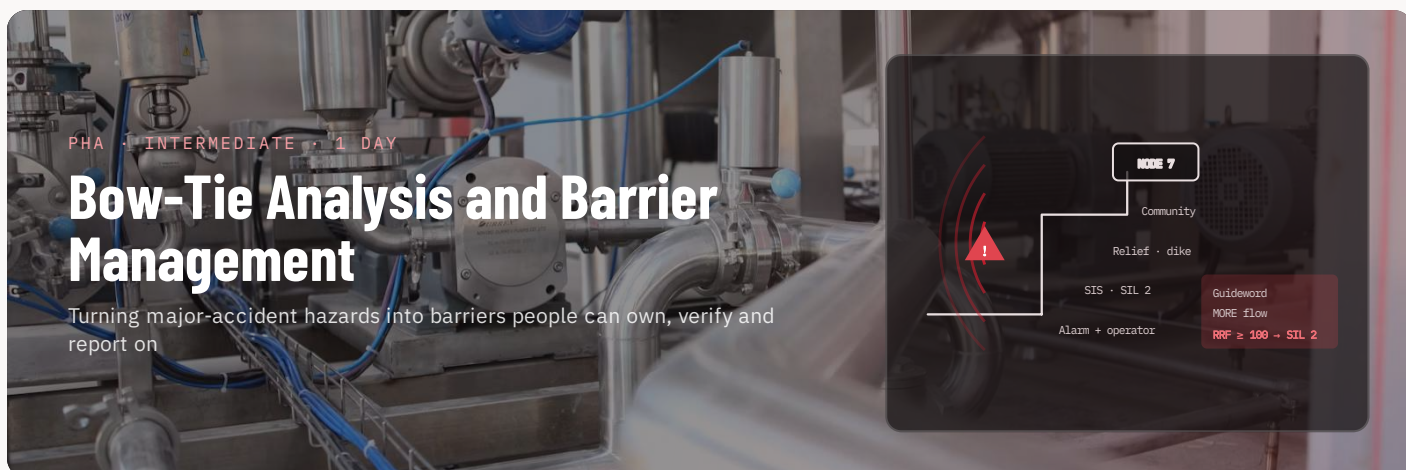




DURATION
1 day

LEVEL
Intermediate

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

4

bow-ties built for your MAHs

1

barrier-criteria checklist

1

barrier-status dashboard concept

Overview

A bow-tie makes a major-accident scenario visible in a way a HAZOP worksheet never will: the threats on the left, the top event in the middle, the consequences on the right and, on every line, the barriers that must work. The course covers building bow-ties to the CCPS/EI method, deciding what qualifies as a barrier, assigning ownership and performance standards, and using the diagrams for barrier-status reporting, incident review and communicating with the workforce. Participants build four bow-ties for their own major-accident hazards.

Learning outcomes

- Define top events and threats at the right level of abstraction
- Distinguish barriers from degradation factors and safeguards that are not barriers
- Apply barrier criteria: effective, independent, auditable
- Assign barrier owners, performance standards and verification activities
- Link bow-ties to HAZOP, LOPA, SCE lists and the incident-investigation process
- Use bow-ties for barrier-status reporting and workforce engagement

Who should attend

Process safety engineers, HSE leads, operations and maintenance managers, safety-case and Seveso report authors, barrier owners

Course outline

MORNING

Major-accident hazards and the Swiss-cheese model · bow-tie anatomy: hazard, top event, threats, consequences · barrier criteria and common errors · degradation factors and degradation controls · building the first bow-tie for a site MAH

AFTERNOON

Barrier ownership, performance standards and assurance · barrier management systems and status reporting · bow-ties in Seveso reports and safety cases · linking to HAZOP, LOPA and SCE records in CeraPHA Studio · three further bow-ties and review

Standards referenced

CCPS / EI Bow Ties in Risk Management IEC 31010 ISO 17776
EI Guidance on Process Safety Barriers Seveso III Directive

Tools & exercises

Diagrams built in the participants' bow-tie tool of choice; barriers cross-referenced to HAZOP and LOPA records in CeraPHA Studio

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

Familiarity with the site's major-accident hazards; HAZOP participation helpful

CERTIFICATION

Certificate of completion

INSTRUCTORS

Practising engineers — TÜV HAZOP Leader, CCPS and IEC 61511 Functional Safety certified — with 200+ years of cumulative plant experience.

Book this course or build a custom curriculum

On-site at your plant or virtual · in-house groups · competency assessment included

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