

Process Hazard & Risk Analysis

Purpose

Controlling risks within high hazard industries requires a robust process safety management (PSM) system and the experienced application of process hazard and risk analysis (PH&RA) techniques. This PH&RA course is part of the **TÜV Rheinland Functional Safety Program**.

Participants who successfully pass the examination will be awarded a TÜV Rheinland FS Engineer (PH&RA) Certificate. The course covers the fundamentals of PSM, hazard identification and risk analysis, evaluation and treatment. The course focuses on the principal methods including HAZID, HAZOP, LOPA, FMEA and QRA as well as the increasingly popular bowtie analysis. It demonstrates how to apply theory in practice, using simple and more complex examples to illustrate key points.

At the end of the course you will be able to

1. Apply the most popular and internationally adopted methods and tools for identifying and managing the risks associated with process related hazards
2. Actively participate in and give effective support during the whole process hazard and risk analysis approach
3. Identify hazards and analyse risk, including applying the IEC 61882 HAZOP standard
4. Relate the requirements of Functional Safety according to IEC 61508 / IEC 61511 to process hazards and risk analysis.

Outline content

Introduction

Overview of TÜV Rheinland FS Program

Process safety management

Risk identification

- What if?, HAZID, HAZOP, FMEA

Risk analysis

- Risk matrix, Bowtie analysis
- Fault & event tree analysis
- Physical Effects Modelling (PEM)
- Quantitative Risk Assessment (QRA)
- LOPA, SIL Assessment
- Human factors in design

Risk evaluation

- Risk criteria, ALARP assessment

Risk treatment

Communication, consultation, monitoring and review

Putting it all together

- Selecting the right technique
- Planning PH&RA studies
- Facilitating workshop-based studies
- Reporting PH&RA studies

Course summary and close out

Examination (see Assessment details below)

Recommended prior study

PH&RA practitioner experience

Who should attend

- Process engineers, safety engineers and managers, instrument engineers and operations personnel, plant and operations managers
- Persons with HAZOP study experience and a basic knowledge of loss prevention

Module is available as

- Face-to-face (classroom) delivery
- Attendance plus examination, or
- Attendance-only (without assessment)

Assessment details

Part 1 – Forty multiple choice questions (20%)

Part 2 – Two short answer questions (20%)

Part 3 – Three long answer questions (60%)

Time allowed 3½ hours, pass score 75%

Other Details

Duration: 3½ days

Price

For prices and further information, or to book a course, please contact **Vicky Billingham** at training@risktec.tuv.com

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