TECHNICAL
EDUCATION
ACADEMY

Operational Risk Management Center

COURSE PROGRAMME

000599

HSSE054 - Operational Safety Techniques: HAZOP and HAZID Methods

This training programme equips oil and gas professionals with advanced skills in hazard identification and risk analysis.



Learn from the Best in the Business!

Course overview

Intermediate level

Why take this course

This training programme equips oil and gas professionals with advanced skills in hazard identification and risk analysis. This course delves into the Hazard and Operability Study (HAZOP) and Hazard Identification (HAZID) techniques, crucial for ensuring operational safety and industry compliance.

The programme starts with an introduction to risk analysis, covering the Analysis of Hazardous Factors of Production (AOFP) and Operational Safety Assurance (OBP). Participants learn about HAZOP's history, development, and application, focusing on identifying hazardous deviations, using "keywords" and "nodes," and applying protection measures like ALARP (As Low As Reasonably Practicable). Practical exercises help trainees apply these concepts to real-world scenarios.

In the HAZID module, participants learn to identify and evaluate potential hazards using qualitative and quantitative risk assessment methods. The course emphasizes the selection and management of multidisciplinary HAZOP and HAZID teams, covering essential skills like communication, leadership, and conflict resolution.

Practical sessions allow participants to analyze a technological block, applying their knowledge to develop actionable safety recommendations. The course also covers strategies for reporting and investigating undesired events, conducting management system audits, and utilizing Process Safety Key Performance Indicators (API RP 754), along with the IOGP process safety reporting scope.

By the end of the programme, participants will have a solid understanding of risk analysis methodologies and the skills to implement them effectively, enhancing operational safety and contributing to continuous safety performance improvement.

Who it is for and how it helps

- Safety Engineers and Managers: Individuals responsible for developing and implementing safety protocols and procedures within their organizations.

- Risk Assessment Professionals: Experts involved in identifying, analyzing, and mitigating risks associated with industrial operations.

- Process Engineers: Engineers who design, implement, and optimize industrial processes, ensuring they operate safely and efficiently.

- Project Managers: Managers overseeing projects in the oil and gas sector, particularly those involving new installations or modifications to existing systems.

- Operations Supervisors and Managers: Supervisors and managers responsible for the day-to-day operation of facilities, ensuring that all processes run safely and smoothly.

- HSE (Health, Safety, and Environment) Officers: Professionals dedicated to maintaining high standards of health, safety, and environmental protection in their organizations.

Course overview — continued

- Maintenance Engineers and Technicians: Individuals involved in the upkeep and repair of industrial equipment and systems, ensuring they remain safe and operational.
- Consultants and Auditors: External professionals who provide expert advice on safety and risk management practices, or who conduct safety audits.
- Regulatory Compliance Officers: Individuals ensuring that their organizations adhere to relevant industry standards and legal requirements regarding safety and risk management.
- Anyone involved in risk management, safety, or operational efficiency in high-hazard industries who seek to enhance their knowledge and skills in HAZOP and HAZID methodologies.

What you will learn

- Understand Risk Analysis Concepts: Comprehend the fundamental principles of risk analysis, including the Analysis of Hazardous Factors of Production (AOFP) and Operational Safety Assurance (OBP).
- Conduct HAZOP Studies: Perform Hazard and Operability Studies (HAZOP) effectively, identifying and analyzing potential hazards and operational deviations within industrial processes.
- Utilize HAZID Techniques: Apply Hazard Identification (HAZID) methods to systematically identify potential hazards in various operational environments.
- Differentiate Between Qualitative and Quantitative Risk Analysis: Distinguish and apply both qualitative and quantitative risk assessment techniques to evaluate and prioritize risks.
- Implement Protection Measures: Understand and implement the hierarchy of protection measures, including ALARP (As Low As Reasonably Practicable), to mitigate identified risks.
- Lead and Manage HAZOP/HAZID Teams: Select and manage multidisciplinary HAZOP and HAZID teams, leveraging effective communication, leadership, and team management skills.
- Conduct Practical HAZOP and HAZID Sessions: Facilitate and execute HAZOP and HAZID sessions, including the practical analysis of a technological block, to develop actionable safety recommendations.
- Prepare Comprehensive Reports: Compile detailed HAZOP and HAZID reports, documenting findings, recommendations, and action plans for improving operational safety.
- Identify and Correct Common Mistakes: Recognize and address common errors in HAZOP and HAZID processes to enhance the effectiveness and accuracy of risk assessments.
- Engage in Continuous Improvement: Utilize strategies for continuous improvement, including reporting and investigating undesired events, conducting management system audits, and applying Process Safety Key Performance Indicators (API RP 754).
- Understand Industry Standards and Compliance: Stay informed about industry standards and legal requirements, ensuring compliance and enhancing the safety culture within their organizations.

Curriculum

Modules 01–04

01 Importance of Risk Analysis in the Enterprise

- Why is risk analysis essential for enterprises?
- What constitutes Risk Analysis (Analysis of Hazardous Factors of Production - AOFP)?
- Overview of OBP (Operational Safety Assurance)
- Key elements of OBP
- Relevant standards and legal requirements
- Distinction between danger and risk
- Qualitative vs. quantitative risk analysis
- AOFP methodologies: An overview of methods such as HAZID, "What if?", and HAZOP

02 HAZOP (Hazard and Operability Study)

- Understanding HAZOP
- Definition and purpose of HAZOP
- Historical background of HAZOP
- Different types of HAZOP and their applications
- Key concepts: "Keywords", "deviations", etc.
- Hierarchy of protection measures: ALARP (As Low As Reasonably Practicable)
- Stages of conducting a HAZOP
- Documentation required for HAZOP

03 Methodology and Philosophy of HAZOP

- Applying HAZOP
- Steps for implementing HAZOP
- Dividing the facility into nodes
- Working with P&IDs (Piping and Instrumentation Diagrams): node display, color coding, etc.
- Practical exercises on dividing technological sections into nodes

04 Roles and Responsibilities

- HAZOP Team Dynamics
- Selecting HAZOP Team members
- Essential skills for the HAZOP leader and participants

Curriculum

Modules 04–06 · Module 04 — continued

- Team dynamics and personality types
- Effective team management skills

05 Conducting a HAZOP Session

- HAZOP Session Execution
- Tools for conducting HAZOP sessions
- Using worksheets and risk level matrices
- Practical HAZOP session exercises on a technological block
- Additional recommendations for risk prevention
- Preparing and presenting the HAZOP report
- Common mistakes in HAZOP sessions
- Key factors for successful HAZOP management

06 Continuous Improvement

- Enhancing Safety Management
- Reporting and investigating undesired events
- Strategies for analysis
- Conducting management system audits
- Process Safety Key Performance Indicators (API RP 754)
- IOGP (International Association of Oil & Gas Producers) process safety reporting scope

Pre-course requirements

- Базовое понимание управления рисками: Знание основных принципов и терминологии управления рисками
- Опыт работы в нефтегазовой отрасли: Минимум 2-3 года опыта работы в нефтегазовой отрасли, особенно на должностях, связанных с безопасностью, эксплуатацией или инженерией
- Техническое образование: Образование в области инженерии (химическая, механическая, процессная) или в смежной технической области настоятельно рекомендуется.
- Знание промышленных процессов: Понимание промышленных процессов, особенно в нефтегазовом секторе, будет полезно
- Знание стандартов безопасности: Базовые знания стандартов и нормативов безопасности, применимых в нефтегазовой отрасли, таких как OSHA, API и другие соответствующие

Curriculum — continued

руководства.

- Опыт работы в команде: Опыт работы в междисциплинарных командах, поскольку сессии HAZOP и HAZID часто требуют совместных усилий.
- Базовые аналитические навыки: Способность анализировать данные, выявлять потенциальные опасности и предлагать меры по их снижению. Хотя эти предварительные требования рекомендуются, курс предназначен для профессионалов, стремящихся углубить свои знания в области идентификации опасностей и анализа рисков, даже если их опыт варьируется.

Joining the programme

Contact the Academy and quote course code 000599 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

Read the pre-course requirements in this programme before enrolling.

Discuss your training needs

mail@tecedu.org
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