Safety Technology & Risk Management: Mastering Hazard Control

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Munich (Germany)



Safety Technology & Risk Management: Mastering Hazard Control

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Why This Course

Industrial environments are becoming increasingly complex, with advanced technologies, interconnected systems, and higher operational demands. In such settings, safety cannot rely on reactive measures alone. Organizations need professionals who can systematically identify hazards, assess risks quantitatively, and implement robust control systems grounded in international standards and engineering best practices.

The Advanced Safety Technology & Risk Management Program is an intensive 1-week course designed for safety engineers, risk managers, maintenance leaders, and technical professionals working in high-risk industries. The program integrates safety engineering principles, reliability analysis, quantitative risk assessment, and modern protective systems to help participants build safer and more resilient operations.

Through practical case studies, applied tools, and real industrial examples, participants gain the expertise to strengthen safety performance and foster a proactive safety culture.

What You'll Learn and Practice

By the end of this program, participants will be able to:

- Apply structured hazard identification and risk assessment techniques to processes and machinery.
- Understand reliability principles and utilize failure analysis methods effectively.
- Perform and interpret quantitative risk assessments.
- Develop and implement control measures based on evaluated risks.
- Identify requirements for safe systems of work aligned with international standards.
- Promote proactive hazard analysis and continuous safety improvement.

The Program Flow

Day 1 - Fundamentals of Safety Technology

- Introduction to safety engineering and lessons learned from major industrial incidents.
- Safety system processes and hazard identification methodologies.
- Risk tolerability criteria and hazard control strategies.
- National and international safety standards, codes, and regulations.



Day 2 - Advanced Risk Assessment Techniques

- Safety management systems and lifecycle safety approaches.
- Risk assessment methodologies for processes, workplaces, and equipment.
- Task-based risk assessment and human factors analysis.
- Introduction to HAZOP Hazard and Operability Study methodology.

Day 3 - Machinery and Work Equipment Safety

- Machinery hazard identification and accident prevention strategies.
- Failure Modes and Effects Analysis FMEA and software safety considerations.
- Human performance and its role in safety optimization.
- Applied HAZOP case studies and practical exercises.

Day 4 - Reliability Technology & Protective Systems

- Types and root causes of failures in industrial systems.
- Reliability-centered maintenance strategies and inspection planning.
- Design principles of control and protective systems.
- High Integrity Protective Systems HIPS and Safety Integrity Levels SIL.

Day 5 - Consequence Analysis & Emergency Planning

- Fundamentals of fire, explosion, and toxic release mechanics.
- Dispersion modeling and quantitative risk assessment techniques.
- Event Tree Analysis ETA and emergency response planning.
- Integrating safety technologies into comprehensive risk management strategies.

Individual Impact

Participants will leave the program with:

- The ability to design comprehensive hazard identification and risk assessment plans.
- Practical skills to evaluate and enhance industrial safety systems.
- Stronger analytical capabilities in reliability and quantitative risk assessment.
- Enhanced competence in emergency planning and protective system design.

Organizational Impact

Organizations benefit through:

- Reduced operational risk and improved safety performance.
- Stronger compliance with international safety standards.
- Increased reliability of critical equipment and systems.
- Better preparedness for emergency scenarios and crisis response.



• A strengthened safety culture driven by proactive risk management.

Training Methodology

This program follows an applied and technically grounded approach, including:

• Real-world industrial case studies and incident analyses.
• Practical exercises in HAZOP, FMEA, ETA, and risk modeling.
• Group workshops on safety system design and maintenance planning.
• Interactive discussions linking theory to operational realities.
• Expert-led sessions integrating engineering principles with safety leadership.

Beyond the Course

After completing the program, participants will be ready to:

• Lead advanced risk assessment and safety improvement initiatives.
• Design and evaluate protective systems for high-risk operations.
• Integrate reliability engineering into safety management strategies.
• Strengthen organizational resilience through proactive hazard control and emergency preparedness.

