

Integrated risk management for major engineering projects

To meet operations' requirements for safe and operable plant, it is essential that technical process safety and human factors issues are addressed early in the engineering design cycle.

The Lloyd's Register Group provides a wide range of safety and risk assessment services worldwide to engineering contracting organisations active in the process industries.

Our services provide third party assurance to project stakeholders and help engineering contracting organisations meet best practice risk-management requirements.

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Services to help your business

The Lloyd's Register Group offers an integrated set of risk management services to help engineering organisations meet best practice in process safety and human-factors risk management.

We can address technology and people issues at the design stage using a well-developed and integrated toolkit.

Process safety methods and techniques we can apply include:

- hazard identification and analysis (HAZID, HAZOP, SWIFT, FMEA)
- consequence analysis for fires, toxic releases, explosions etc, covering human harm and environmental effects
- quantitative risk assessment (QRA)
- fault tree frequency / likelihood analysis
- SIL (Safety Integrity Level) determination within the framework of IEC 61508.

Our status as an independent third party provides assurance of impartiality to all project stakeholders, and we are often called upon to provide third party facilitation of hazard and operability (HAZOP) studies for major projects.

With increasing awareness of the role people can play in ensuring safe plant operation, operating companies are demanding that human factors are considered within the plant design process. Our capability includes:

- ensuring operations and maintenance requirements are captured in asset design
- identifying and assessing safety critical tasks
- providing human factors input to design reviews and hazard identification processes e.g. HAZOPs
- establishing human error probabilities in support of QRA and SIL assessments

We also provide assurance that asset design is compliant with human factors engineering



requirements, and that the relevant standards have been appropriately applied. Typical areas of focus for human factors on engineering projects are plant layout, and the design of control rooms, control systems, and alarms.

Taking an approach to risk management that integrates people with technology supports:

- early identification of design problems
- reduced costs
- faster commissioning
- fewer hazards during commissioning and operation
- improved process reliability and lower cost of ownership.

LRQA, a member of the Lloyd's Register Group can also assist with certification of environmental management systems.

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Typical benefits of working with Lloyd's Register

In choosing the Lloyd's Register Group to assist you in risk management, you can be assured of a service which provides:

- a high quality service tailored to meet your specific needs
- wide experience and expertise covering all aspects of risk management
- in-depth understanding and experience as an independent safety auditor of petrochemical and industrial facilities
- specialist knowledge in areas of new technology, and high integrity systems
- access to the Lloyd's Register Group's technical expertise worldwide, giving you contact with local expertise and knowledge regarding regulatory requirements and conditions.

If you need assistance with safety and hazard management, the Lloyd's Register Group has the expertise and international experience to meet your needs

Recent projects

Examples of typical projects include:

- HAZOPs for a major refinery expansion project
- detailed QRA for a new build high hazard chemical plant
- safety studies for gas field life extension projects
- review and assurance of human factors integration in design
- human error quantification in support of pipeline integrity risk model
- development and application of tool for safety critical task analysis
- human factors Integration into major decommissioning project
- human factors engineering support on major EPC contracts.

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